UNITED STATES ARMY MAY 1974

AVIATION DIGEST

. . . something which I hope those in Army aviation will hold close and dear to their hearts forever—you are the brothers, the friends, the fellows who live and work with the men on the ground. And everywhere we always have had something that was more than cooperation, something more than teamwork. . . . In a way it is an affair of the heart—in the planning, in the working, in the fighting. That's why we must have, and we have to have always, Army aviation . . .

GENERAL CREIGHTON W. ABRAMS
Chief of Staff, U. S. Army

UNITED STATES ARMY AVIATION DIGEST

MAY 1974 VOLUME 20 NUMBER 5

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ABOUT THE COVER

This month the DIGEST takes special note of Memorial Day by paying tribute to all who have given their lives while serving with Army aviation. Our thanks to SP6 S. J. Stout who prepared the cover artwork

The mission of the U. S. ARMY AVIATION DIGEST is to provide information of an operational or functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

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Articles, photos, and items of interest on Army aviation are invited. Direct communication is authorized to: Editor, U. S. Army Aviation Digest, Fort Rucker, AL 36360.

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THOUSANDS OF SOLDIERS have given their lives while serving with Army aviation since its birth on 6 June 1942. Some have died in combat . . . others during peacetime operations. It is an honor to pay tribute to all of these men in this special Memorial issue of the AVIATION DIGEST.

When we speak of paying tribute to these men, what should it really mean? Let me answer that by sharing some memories with you. I have been closely associated with Army aviation since 1941 when, as a member of the Class Before One, we tested and validated the concept of Army aviation. Those are fond and treasured memories to me.

There are sad memories too—such as Army aviation's first fatality. Lieutenant R. P. Stallings was a tall, blonde-haired, nice-looking chap who was killed at Ft. Sill, OK, in an L-2. He was a flight instructor, riding in the back seat, and gave his student a simulated landing. The airplane got away from the student and the instructor and spun in. LT Stallings' head hit the back of the front seat and broke his skull. The student walked away from it.

A happier memory was Private First Class Gene Thaxton, who was critically wounded in the Korean War. PFC Thaxton lived, thanks to helicopter medical evacuation and a Mobile Army Surgical Hospital (MASH). Both the helicopter and MASH were newly developed during the Korean War and have saved thousands of lives in Korea and in the Republic of Vietnam.

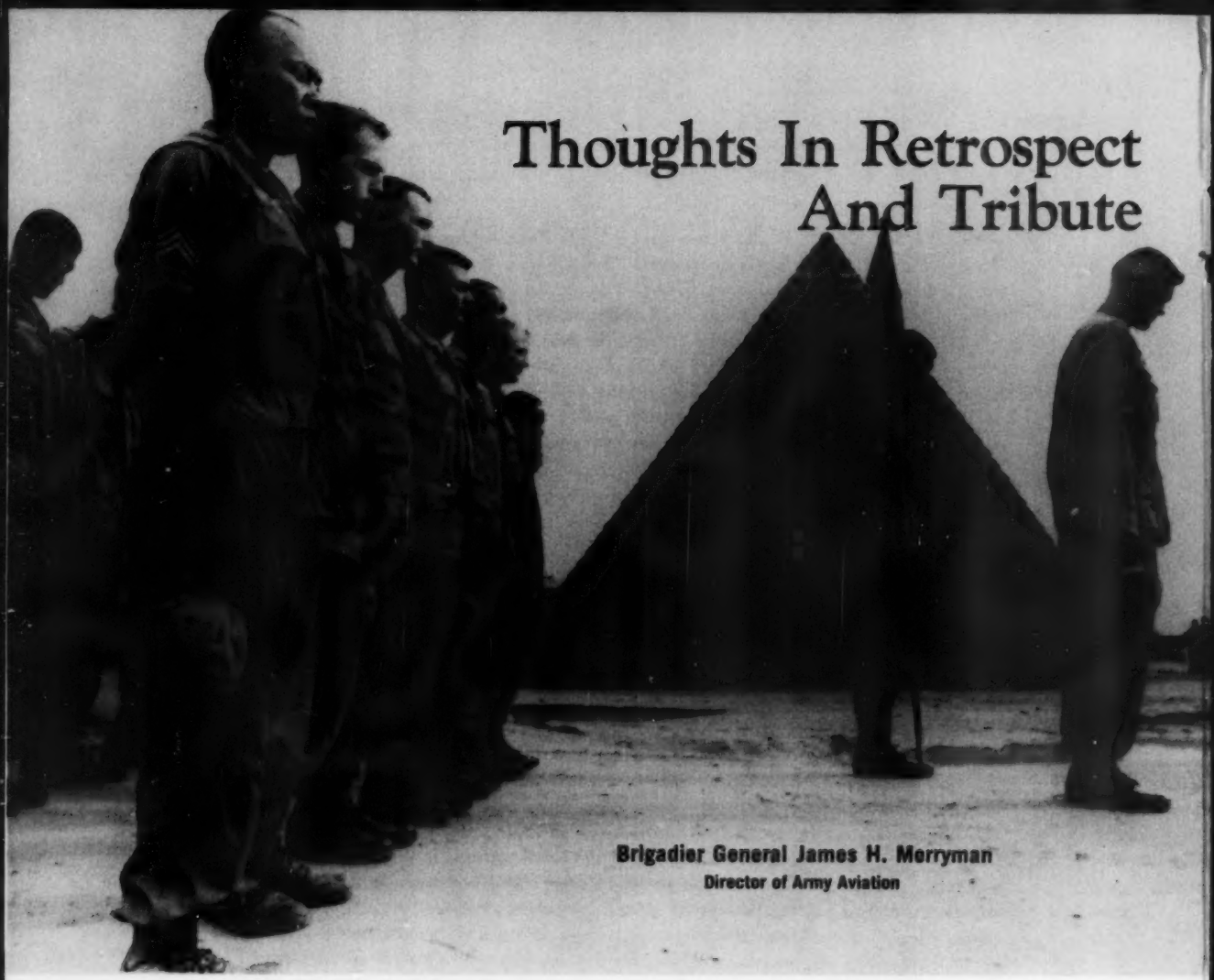
I singled out LT Stallings and PFC Thaxton for a reason. If LT Stallings had been using either shoulder harnesses or a crash helmet (both are now required), he probably would have walked away from the L-2 accident. Regrettably, LT Stallings—and many of his contemporaries who were killed—were a part of Army aviation in its infancy, while it was learning about and developing protective flight gear, hardware, tactics, etc. PFC Thaxton came along after Army aviation had time to become much more professional. This was due to hours upon hours of hard work by a lot of dedicated people. Certainly, we have come much further since Korea, thanks to a continuing dedication. Think of the advances we have made in developing protective clothing, tactics, hardware, armament, aviation safety, medical evacuation and other fields relating to Army aviation. These all have been the result of dedication.

Now, in the wake of Vietnam, it is time to rededicate our efforts. This, then, will be the finest tribute we can pay to those who have made the supreme sacrifice.

LIEUTENANT GENERAL ROBERT R. WILLIAMS

General Williams helped organize and was a member of the Class Before One that established the current concept of Army aviation. He has been deeply involved with Army aviation every since. He helped to develop the first flight training programs; served as Director of Army Aviation; was Commanding General/ Commandant of the Aviation Center/School; Commanding General of the Test and Evaluation Group which evaluated the testing of the 11th Air Assault Division (T); commanded the 1st Aviation Brigade in the Republic of Vietnam; served as Assistant Chief of Staff for Force Development; and most recently is the Deputy Commander in Chief, U. S. Army, Pacific

Thoughts In Retrospect And Tribute



Brigadier General James H. Merryman
Director of Army Aviation

HUE, PLEIKU, BONG SAN, Tay Ninh, Cu Chi and Soc Trang are strange names of yesterday, each with its own ring, each recalling to us history, a part of our lives, a place, a time, numerous memories set aside to which we can now turn and recall a period becoming increasingly less vivid and more distant to us. Yet, there are also memories time will never erase; memories of people, of units, of missions, the jobs we had to do, the gains we had to make and the battles we had to fight. Every facet of every tour had its moments of frustration, of desperation, of life, of death, of bitterness and joy, of laughter and tears, and now, of solemn tribute.

Army aviation—it meant many different things to many different people. To the Vietnamese it meant the ever-increasing flock of rotors beating their way across their country. To the enemy it was the force they could not beat—the potent, flexible air arm of the U. S. Army, reaching even into the spider hole to extract the enemy. To ground commanders it was mobility—the ability to move quickly from one landing zone to another, from a base camp to the enemy, from a hard fought battle to the temporary refuge of a more secure area. To the soldier it meant the "chopper" that put him on the ground, pulled him out when he was hurt, brought him his beer and mail, gave him that final ride to Tan Son Nhut, Cam Rahn or Da Nang for the trip back to his "world"—continental United States. But to the aviator it meant a way of life, a frame of mind. It was comradeship, dedication and esprit, together forming the spirit of Army aviation, the force which sustained the ground war effort in Southeast Asia for so many long hard years, the force behind the

General Merryman recaptures the diverse Army aviation roles in Vietnam and the meaning of airmobility to the ground commander, the individual soldier and to the Vietnamese. He credits the dedicated mechanics, supply and other supporting personnel who put the aircraft in commission. The professionalism, esprit and comradeship shown by the flight crews enabled Army aviation to meet and surpass every mission given it in support of the ground soldier

American ground soldier in the Republic of Vietnam.

The merits of the conflict may be contested in history books for years to come. Victory as we knew it in Europe and Japan has never been tasted by our nation on mainland Asia. On the other hand, war remains an extension of foreign policy and must be remembered as such. The implementation of that war, however, was our victory. Army aviation succeeded in meeting and surpassing every mission given it in support of the ground soldier. We proved unquestionably the value and ufility of the helicopter in combat. We definitively established the need for airmobility on the battlefield. Our history rests, glittering in the heroism of our officers and men, in the manner in which we employed our machines and in the understanding we had of duty and professionalism.

To laud superficially the accomplishments of Army aviation does it a disservice. Statistics, too, though they project indisputably the scope of our efforts, alone lack the luster that a narrative may offer. Examining, for example, our assets operating in-country for a given timeframe, one finds that our highest monthly average for a 1 year period in the war theater was 3,795 aircraft. The figure is impressive, but it's only the tip of the iceberg.

We're not speaking merely of numbers of aircraft; we're talking about an entire logistical force of enormous scope, spreading its tentacles from deep within the continental United States to the farthest reaches of the forward edge of battle. We are referring to general and direct support personnel, each technically superlative, each a logistician in his own right, transforming supply documents and work orders into tactical aircraft in the field, fighting the war. We're talking about the mechanic, the young man in a rain drenched revetment, flashlight in hand, inspecting a "hell hole" or tail rotor in the early, pre-dawn hours. These are the men the aircraft totals represent, the Army aviation logistical team, stretching from Corpus Christi to Vung Tau, pulling together, keeping a fire team on station west of Phu Bai, capping an outpost under fire, prepping a landing zone in the Iron Triangle.

And what of cumulative flying time? From July 1965 to December 1972 Army aviation compiled an astronomical 14.7 million combat flying hours. The figures stand alone, stand on their own merit, stand in vivid testimony of the colossal combat support task confronting Army aviation in the field.

Below, the flexible UH-1 Hueys arrive at LZ Stud to move 1st Cav Division troops nearer to Khe Sahn, 1968. At right, a CH-47 Chinook crewchief prepares Vietnamese civilians for evacuation from the enemy dominated area in the Iron Triangle in 1967

Left: A CH-47 Chinook airlifts supplies to artillery unit on a hilltop in Vietnam in 1968. Above: A CH-54 Flying Crane after emplacing howitzers delivers a load of ammunition to firebase in Kontum Province

More than the task, however, more than the amassed hours of men and machines in the air, the figures point to a different time—cockpit time, crew time, time when a tactical emergency called an aviator out of a revetment when he thought his eleventh hour in the left seat was his last of the day; time which changed as he sat, logbook back on the pedestal, cranking his bird for what often turned into an endless night.

The hours, too, meant a dedication to cause. They point to devotion to a philosophy of unprecedented support of the ground soldier. Army aviation in 14.7 million flying hours wrote its own history which distinguished not only these units but also made each an integral component of the ground commander's combat assets. The many million hours represent missions without which the ground commander could not have been successful; missions of command and control, insertions, extractions and of resupply efforts. Each in its own way clearly defines the requirements of Army aviation on the battlefield of yesterday and tomorrow.

What was accomplished in the nearly 15 million hours of flying time? From July 1965 to December 1972, 5.2 million tons of cargo were carried and 42.5 million passengers transported. Once again, however, the true story goes back to the crews, the aviators, gunners and crewchiefs distributing loads, shuttling troops and packing that "slick" until at max gross it bounced and lumbered down a dirt strip resupply point, becoming airborne only seconds prior to its skids skimming over boundary concertina. The true story tells of tactical troop movement, the transport of Buddhist monks, Vietnamese children, chickens, pigs, of all those people and elements which comprise the citizenry and economy of small Asian hamlets. The tales go on and on, each marking an increment in the war, a period of time when statistics were being compiled and data accumulated while ammunition was being hauled, combatants extracted and the wounded retrieved.

The true story also has its very

UH-1Bs of the 119th Airmobile Company land near Pleiku with ARVN troops who penetrate the jungle in pursuit of Viet Cong in 1963

solemn moments. From 1965 to 1972 the Army lost 4,632 aircraft. All losses were not combat losses, of course. Clearly, we had accidents, but we experienced tragedy on many occasions. Landing zones were hot; aircraft were hit. The sequence was simple, repetitive and costly. Ten ships in, three out; the fire teams on station, security, recovery, more aircraft downed and then the final tally, the nightly reports, filling the pages of chapters in our lengthy logs.

With aircraft lost came our tragedies. KIAs, MIAs and WIAs for the 1965-1972 period numbered 6,130. Heart rending evaluations and analyses of what went wrong and why filled many a briefing tent, many a makeshift club, many a "hootch" and many a mind. The missions eventually lost clarity but the losses did not. Empty boots and memorial services spoke constantly of the gravity of our tasks, the hazards of our profession, the finality of a tactical error or a superior hostile force.

Yet, our losses somehow sustained us. In life as well as death we held our pride; pride in mission, pride in our goals, our professionalism and ourselves. Other losses were also ours—losses which, with the help of God, proved only temporary. Ten aviation warrant officers and four commissioned officers were returned to us as former prisoners of war.

More must be mentioned about our warrant officer aviators. We owe a special tribute to this segment of our aviation community. At the start of the conflict in Vietnam we had from 1,500 to 2,000 warrant officers assigned as pilots in the war effort. At the war's peak in 1969 that number had climbed to 11,500. Many of our finest commissioned officers saw extensive cockpit duty, especially in the early years of the war. However, the brunt of the flying, the biggest block of that 14.7 million flying hours, was accumulated by the Army's aviation warrant officer. In the compilation of such enormous statistics our warrant officer wrote his name indelibly on every page of aviation history.

A soldier directs a supply laden CH-54 assigned to the 355th Crane Company, to Firebase 6 near Ben Het in 1969

The whine of a turbine, the beat of a rotor as it cuts through torrid, tropic air has not been stilled in Vietnam. War still threatens the South Vietnamese though we all hope for a maintained, lasting peace. The fact remains though that what peace exists today is maintained in no small degree by the deterrence manifested in the airmobile capability of our allies. The South Vietnamese people's success at peacekeeping remains a lasting tribute to what Army aviation can do and will continue to do toward success in combat.

In my long association with Army aviators and support personnel, I have found them a unique breed, dedicated to the concept of professionalism in all they do, united in their purpose to support the ground soldier in combat and nurtured on those philosophies of spirit and purpose which backed the success of Army combat operations in Vietnam.

To all who took part in that struggle as a part of Army aviation, our nation is deeply grateful.

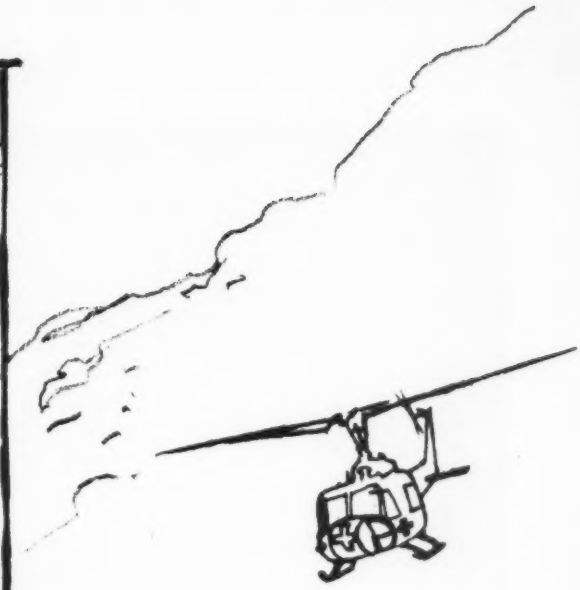
Brigadier General James H. Merryman, Director of Army Aviation, commanded the 269th Combat Aviation Battalion in Vietnam. During a second tour he commanded the 17th Aviation Group. Prior to his present assignment General Merryman was the Executive and Assistant for Air Mobility to the Assistant Secretary of the Army (R&D)

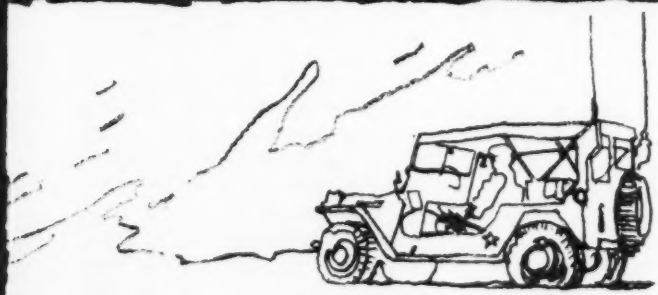
Dustoff -- When I Have Your Wounded

Major General Spurgeon Neel, M.D.

Commander, U. S. Army Health Services Command
Fort Sam Houston, TX

"DUSTOFF—When I Have Your Wounded" is a brief but succinct overview of the contributions of DUSTOFF to lives saved, patient care, medical efficiency and troop morale. The story is anchored on two of the many medical aviator heroes to provide perspective to the statistics cited. It was the dedication of the crews that made the magnificent system go





MAJOR CHARLES L. Kelly, Medical Service Corps, was DUSTOFF and DUSTOFF was "Combat Kelly." The two became synonymous in the Republic of Vietnam in 1964 when the most effective of all emergency medical evacuation systems emerged to full maturity in the mountains and paddies halfway around the world.

As commander of the 57th Medical Detachment (Helicopter Ambulance), Kelly assumed the radio callsign "DUSTOFF." His skill, aplomb, dedication and daring soon made both famous throughout the Delta. The lonely silence of many a distant outpost was broken by his radio drawl, " . . . this is DUSTOFF. Just checking in to see if everything is okay." And when there were wounded, here came Kelly "hellbent for leather!"

On such a mission on 1 July 1964, Kelly was making an approach into a hot area to pick up wounded only to find the enemy waiting too with a withering bar-

Major Charles L. Kelly

rage of fire. He was advised repeatedly to retire but refused. When a U. S. advisor on the ground gave him a direct order to withdraw Kelly calmly replied, "When I have your wounded." Moments later Kelly died with a single bullet wound through his heart.

Kelly was dead but the legacy was only beginning. DUSTOFF became the callsign of all Army aeromedical evacuation missions in Vietnam and "when I have your wounded" became the personal and collective credo of the many gallant medevac pilots who followed him.

Major Charles L. Kelly was highly decorated for his valor and is memorialized by a heliport named in his honor at Ft. Sam Houston, TX. A far more appropriate and living memorial to him is the thousands of young Americans and other nationalities alive today as the result of DUSTOFF, the system that Kelly died for.

Regardess of the criteria utilized, the American soldier wounded in Vietnam had the best chance of survival of any war to date. The mortality rate among wounded reaching medical treatment facilities was only 2.6 percent, compared to 4.5 percent in World War II and 2.5 percent in Korea. But this is not the complete picture. Many more seriously wounded reached medical facilities alive to receive the benefits of modern medical care. Our surgeons have never been more challenged and never have they performed more magnificently. In previous wars most of these mortally wounded would have died en route and would have been recorded as KIA (killed in action). Assuming that those who died within the first 24 hours of hospitalization were in this category, the real comparable mortality rate was closer to only 1 percent.

A more realistic index of comparison of the effectiveness of the combat evacuation/treatment systems between wars is the "deaths as percent of hits" or ratio of deaths to deaths plus surviving wounded, which adjusts for the effect of the rapidity of evacuation upon the echelon at which death occurs. In World War II 29.3 percent of the wounded died, in Korea it was 26.3 percent, while in Vietnam it was only 19 percent. Further, the ratio of KIA to WIA (wounded in action) was 1 to 3.1 in World War II, 1 to 4.1 in Korea and 1 to 5.6 in Vietnam.

The major factors contributing to this outstanding accomplishment in the management of battle wounds were:

- Swift reliable helicopter evacuation.
- Ready availability of ample amounts of whole blood.
- Highly skilled, well organized surgical teams.
- Well equipped, semipermanent forward hospitals.
- Effective management of available medical resources.

Of these important factors, helicopter evacuation is considered the common denominator of the success achieved. Without DUSTOFF it would have been impossible to exploit the other factors cited and the management of medical resources would have been much less effective.

Helicopter evacuation in Vietnam was neither a sometime thing nor a fair weather, daytime phenomenon. DUSTOFF was *the* method of emergency medical evacuation with ground means in a secondary supporting role. A high percentage of sorties were flown at night and weather was not a significant deterrent.

The number of patients evacuated by DUSTOFF rose from 13,004 in 1965, to 67,910 in 1966, to 85,804 in 1967 and peaked at 206,229 in 1969. In 1969 DUSTOFF completed more than 104,112 missions while flying approximately 78,652 combat hours. These statistics include evacuation of Vietnamese soldiers and civilians, Free World Forces and even Viet Cong as well as U. S. casualties. One has only to relate these statistics to the survival data previously cited to extrapolate the tremendous number of lives saved by DUSTOFF.

In addition to significant contribution to saving lives, amelioration of suffering and improving medical

Major Patrick H. Brady

efficiencies, DUSTOFF contributed immeasurably to the morale and combat effectiveness of our soldiers. The soldier committed to battle in an isolated situation *knew* that he was within 35 minutes of definitive surgical care should he become wounded, and he *knew* that DUSTOFF would be there when needed. For each of the thousands of wounded actually evacuated, tens of thousands of his comrades were reassured by the red crosses and later the white ships of DUSTOFF.

On 9 October 1969 at the White House, the President of the United States recognized the contributions of DUSTOFF when he awarded the Medal of Honor to Major Patrick H. Brady, Medical Service Corps, for conspicuous gallantry and intrepidity in action at the risk of his life and beyond the call of duty (see page 1 and "Out Of The Valley Of Death," May 1970 DIGEST). Brady learned to fly DUSTOFF with Kelly and continued the tradition. On 6 January 1968 he utilized three helicopters in succession on multiple missions under heavy fire to evacuate 51 seriously wounded men, many of whom would have died without prompt medical attention.

Nor is this the end of DUSTOFF's proud story. The system which reached perfection in Vietnam is now being applied to the significant emergency medical care problems within the United States. Lives are being saved daily on our highways, in our factories and in our homes by the use of helicopter evacuation and the lessons learned in Vietnam. Project MAST (Military Assistance to Safety and Traffic) has demonstrated clearly the feasibility and necessity for expansion of this service to our citizens (see "MAST Is," November 1973 DIGEST). The right to live is a basic American right, whether on the field of battle or in our metropolitan and rural areas at home. Helicopter evacuation adds meaning to such innovative health care delivery systems as the Regional Medical Programs. A health care system incorporating helicopter evacuation is economically competitive with present systems without this capability.

I am convinced that DUSTOFF is the brightest light in the dark shadows of Vietnam. DUSTOFF with its Kellys and Bradys exemplifies the highest dedication of the Army Medical Department—"when I have your wounded." I knew them well and am proud.

Major General Spurgeon Neel, M.D., MC, is the commander of the U. S. Army Health Services Command at Ft. Sam Houston, TX. He was the first Army officer to be certified in the specialty of aviation medicine by the American Board of Preventive Medicine. Prior to his present assignment he was the assistant surgeon general for the United States Army

IN DECEMBER 1973, President Richard M. Nixon announced a new safety educational and promotional campaign called "Safety '76." This program began in January 1974 and will continue through 1976. It is a follow-on program of the "Zero-In on Federal Safety" campaign which ended in 1973 and which proved successful in reducing injuries among federal employees.

In support of this program, General Craighton W. Abrams, Army Chief of Staff, has designated June 1974 as "Take a Minute for Aviation Safety" month. This theme is to encourage aviation-related personnel to consider safety in all their aviation activities and to develop supporting programs to increase Army aviation safety awareness.

The combined Army aircraft accident rate of Active Army, Army National Guard and Army Reserve for the first half of FY 74 was 6.39 per 100,000 flying hours. This is the lowest combined rate since the Army began its accident prevention program in 1958. Credit for this belongs to all individuals who have enthusiastically accepted and supported the accident prevention program.

Naturally, we want to continue this trend and there is no doubt in my mind that even greater gains are possible. Even though the task becomes more difficult as we get closer to a near-zero rate, this indication that your individual unit programs are paying off should encourage everyone to try even harder. As accidents decrease, the time we previously spent in reaction to accidents can now be spent initiating action to prevent accidents.

The achievement of greater gains in aviation safety will require closer command supervision and firmer enforcement of discipline. Safety is an ongoing program and must be integrated into all phases of operations. The commander should effectively use the skills and talents of his aviation safety officer (ASO) in identifying hazards and administering the unit's accident prevention program. To aid ASOs in promoting GEN Abrams' June safety campaign, USAAAVS has prepared a special packet of educational material. This packet contains posters, decals, bumper stickers, mobile hanging signs and a news release for local press and radio coverage.

With safety improvement as our everyday mission, I am confident we can look forward to a continued reduction in the Army aviation accident rate. Our goal is to close out FY 74 with the lowest rate since the beginning of the aviation accident prevention program, and I urge all individuals to "Take a Minute for Aviation Safety."

USAAAVS

Colonel F. M. McCullar
Army Aviation Safety Officer

VIEWS FROM READERS

During hostilities in the Republic of Vietnam the citizens of the Wiregrass area of Alabama—where Fort Rucker is located—were acutely aware of the many sacrifices of Army aviation personnel. In gratitude people in the Wiregrass area established a small wayside park in Enterprise. In the center they placed a statue dedicated to the men of Army aviation. Made of the finest marble, the monument depicts a Soldier representative of all of those associated with Army aviation

Sir:

As I sat listening to the names being called out, I thumbed idly through the graduation program. I had just completed 6 months of study in the Aviation Warrant Officers Intermediate Course. I looked at the background of the guest speaker and the names of the men I had known well for the last months. I started to look up when my attention was drawn to the back cover of the program.

There on the back, in large black letters, were the words: I AM ARMY AVIATION. They were the words of Major Larry Joyce [see June 1970 DIGEST, page 33]. He speaks of famous men like Dempsey and Holloway. He speaks of tours and places such as Nam Can, Blackhorse and Lane. He speaks of rockets, tracers, "Charlie" and death. He speaks in terms that are the mission of the Army: to close with and destroy the enemy. He speaks in words that reflect what Army Aviation is to him. He does not tell all that Army Aviation is, but merely touches on one part that is the glorious. Army Aviation must be more.

Army Aviation is the names of comrades that few remember. Names of men who were doing a routine job to them; men who paid freedom's price trying to get some food to some hungry soldiers. Names of men that did their daily jobs with dedication, even when the reasons seemed so vague. Army Aviation is the pilots that flew all night to listen to five men in the jungle, making sure they were all right, and then doing it again the next night.

Army Aviation is the pilots that today fly lonely vigil on foreign borders; the pilots that take young men and turn them into well-trained, highly motivated aviators. Army Aviation is the man who stands on the teaching platform and teaches, in an exemplary manner, the skill and knowledge that is needed in the foreseen conflicts of the future, but wishes he were out flying. Army Aviation is made up of the pilots that provide the commanders of today's fast-moving Army that same fast-moving transportation. Those are the pilots that sit in small airports or airfield operations for long, boring hours between flights and still find satisfaction in their accomplishment. These are the men of Army Aviation and I remember their names well.

Army Aviation is the places like New Braunfels, Texas, the Mississippi Valley, Nicaragua, and Gulfport, Mississippi. Whenever and wherever natural disasters strike and emergency relief is needed, the Army Aviator and his faithful machine is there. Project MAST [Military Assistance to Safety and Traffic] is Army Aviation. Ask the mothers that have had children saved by their speedy action. Ask the victims of the countless car accidents, home accidents and heart attacks that have been rushed to proper facilities and been given another lease on their precious lives. These acts speak of life, not death. These acts speak of giving, not taking. These acts speak of love, not hate for our fellow man. This is Army Aviation and I remember this.

Today, there is a tendency to look at the Army like a garbage man. As long as everything runs smoothly, he is looked down on as having a despicable job, fit for the unfit. Just as soon as the garbage starts to collect and the smell gets bad, he becomes an important person and people become concerned about his welfare. Army Aviation, being a part of this Army perception, has this stigma. It is not true and certainly should not be perpetuated by our own.

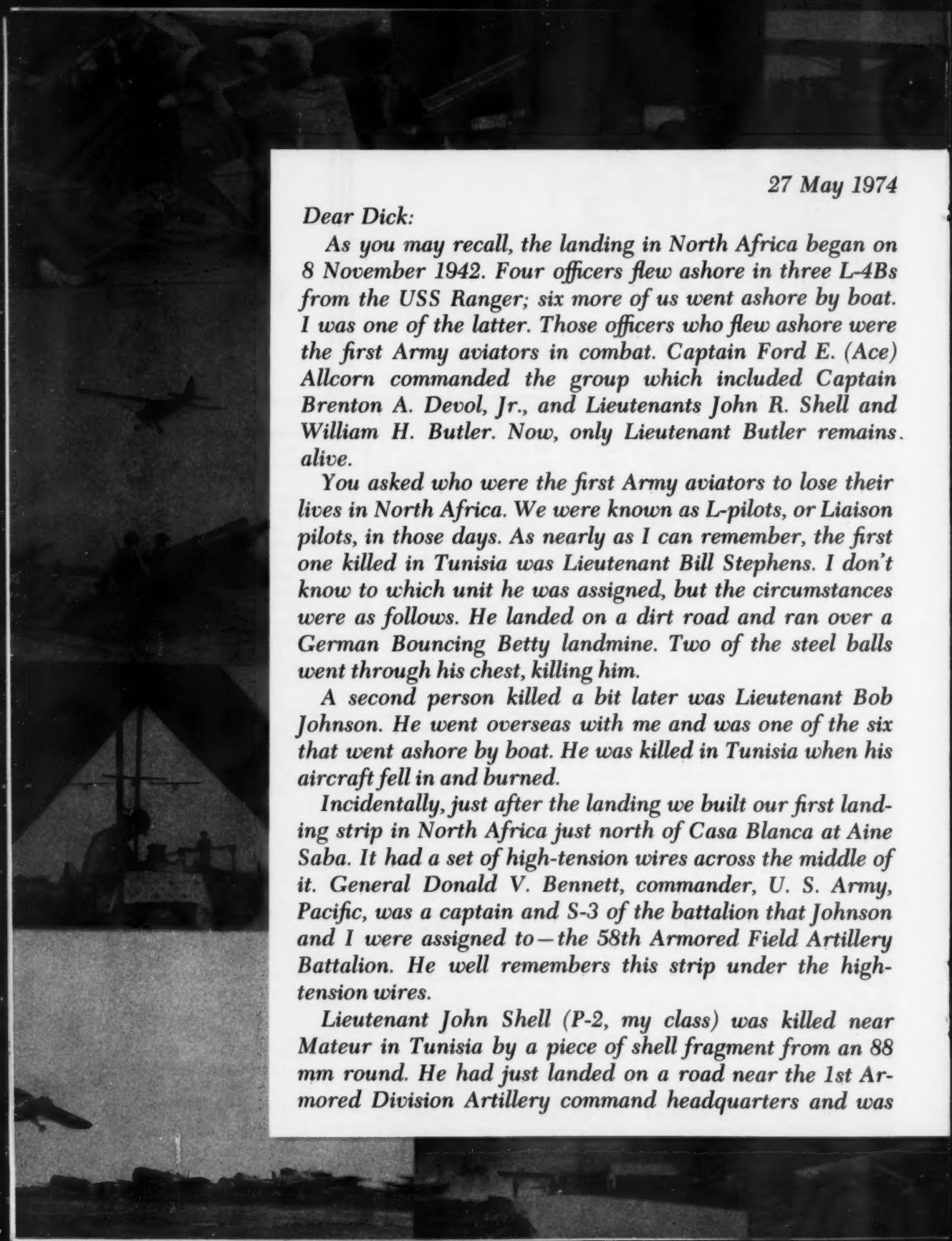
Vietnam is behind us and Army Aviation, as we knew it there, should not be forgotten. It learned and taught many sweet and bitter lessons, both to ourselves and our would-be enemies. We live today and that is the Army Aviation that we should make sure Americans and we understand and respect. At times Army Aviation is the sword of death and destruction. At *all* times it is the Angel of Mercy and the giver of comfort and aid, in war or peace. Remember, mercy was Army Aviation's original mission in the rotary wing world.

Major Joyce tells better than I can, all that Army Aviation is in his last line. We must never forget the past, but we should not want to return either. We should tell of today and plan for tomorrow.

"Whether at home or on foreign shores, I will be there . . . keeping my faith in God and country.
I AM ARMY AVIATION."

CW2 David R. Katz
21 Olsen Lane
Ft. Rucker, AL 36360

Continued on page 21



27 May 1974

Dear Dick:

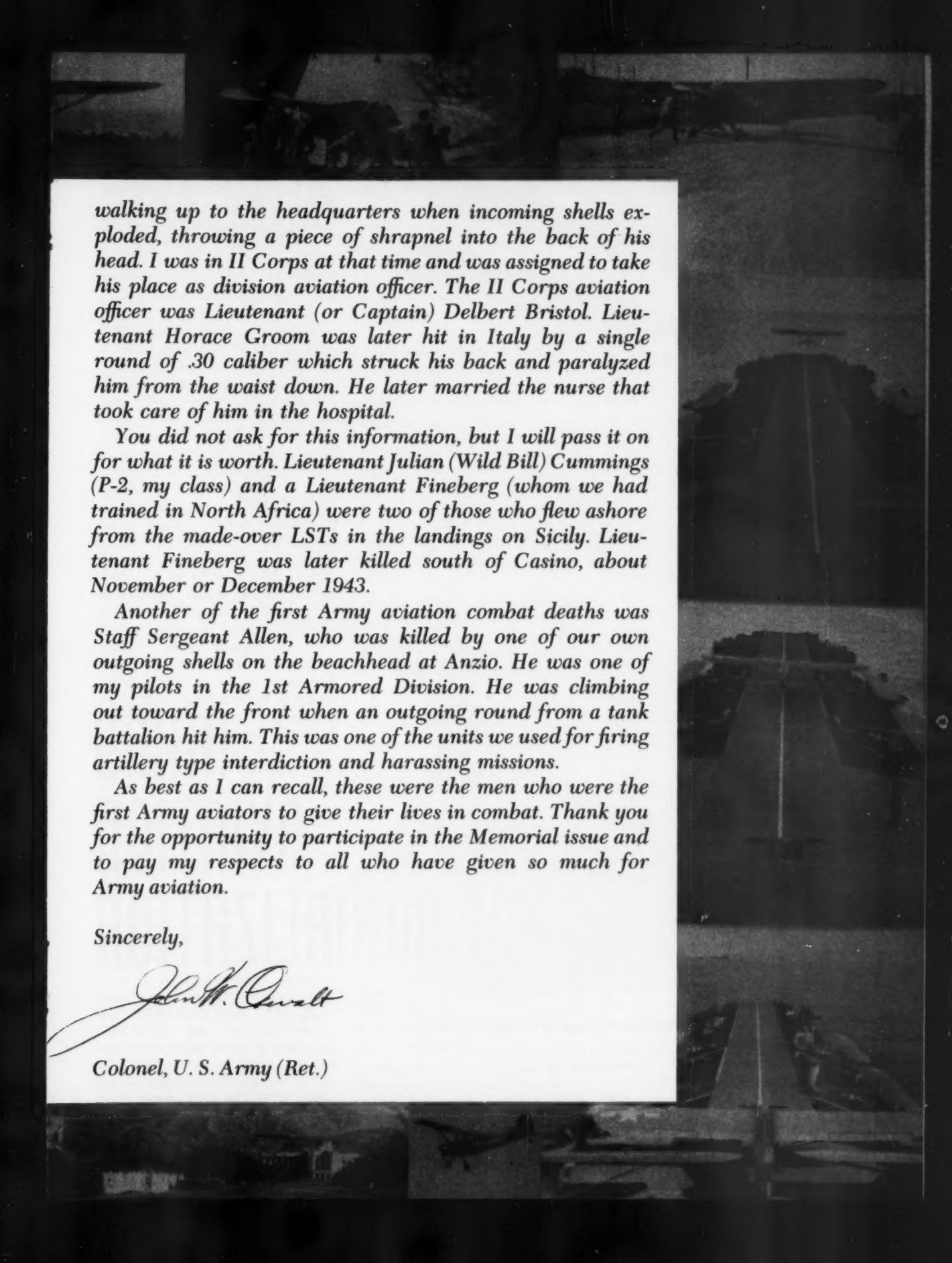
As you may recall, the landing in North Africa began on 8 November 1942. Four officers flew ashore in three L-4Bs from the USS Ranger; six more of us went ashore by boat. I was one of the latter. Those officers who flew ashore were the first Army aviators in combat. Captain Ford E. (Ace) Allcorn commanded the group which included Captain Brenton A. Devol, Jr., and Lieutenants John R. Shell and William H. Butler. Now, only Lieutenant Butler remains alive.

You asked who were the first Army aviators to lose their lives in North Africa. We were known as L-pilots, or Liaison pilots, in those days. As nearly as I can remember, the first one killed in Tunisia was Lieutenant Bill Stephens. I don't know to which unit he was assigned, but the circumstances were as follows. He landed on a dirt road and ran over a German Bouncing Betty landmine. Two of the steel balls went through his chest, killing him.

A second person killed a bit later was Lieutenant Bob Johnson. He went overseas with me and was one of the six that went ashore by boat. He was killed in Tunisia when his aircraft fell in and burned.

Incidentally, just after the landing we built our first landing strip in North Africa just north of Casa Blanca at Aine Saba. It had a set of high-tension wires across the middle of it. General Donald V. Bennett, commander, U. S. Army, Pacific, was a captain and S-3 of the battalion that Johnson and I were assigned to—the 58th Armored Field Artillery Battalion. He well remembers this strip under the high-tension wires.

Lieutenant John Shell (P-2, my class) was killed near Mateur in Tunisia by a piece of shell fragment from an 88 mm round. He had just landed on a road near the 1st Armored Division Artillery command headquarters and was



walking up to the headquarters when incoming shells exploded, throwing a piece of shrapnel into the back of his head. I was in II Corps at that time and was assigned to take his place as division aviation officer. The II Corps aviation officer was Lieutenant (or Captain) Delbert Bristol. Lieutenant Horace Groom was later hit in Italy by a single round of .30 caliber which struck his back and paralyzed him from the waist down. He later married the nurse that took care of him in the hospital.

You did not ask for this information, but I will pass it on for what it is worth. Lieutenant Julian (Wild Bill) Cummings (P-2, my class) and a Lieutenant Fineberg (whom we had trained in North Africa) were two of those who flew ashore from the made-over LSTs in the landings on Sicily. Lieutenant Fineberg was later killed south of Casino, about November or December 1943.

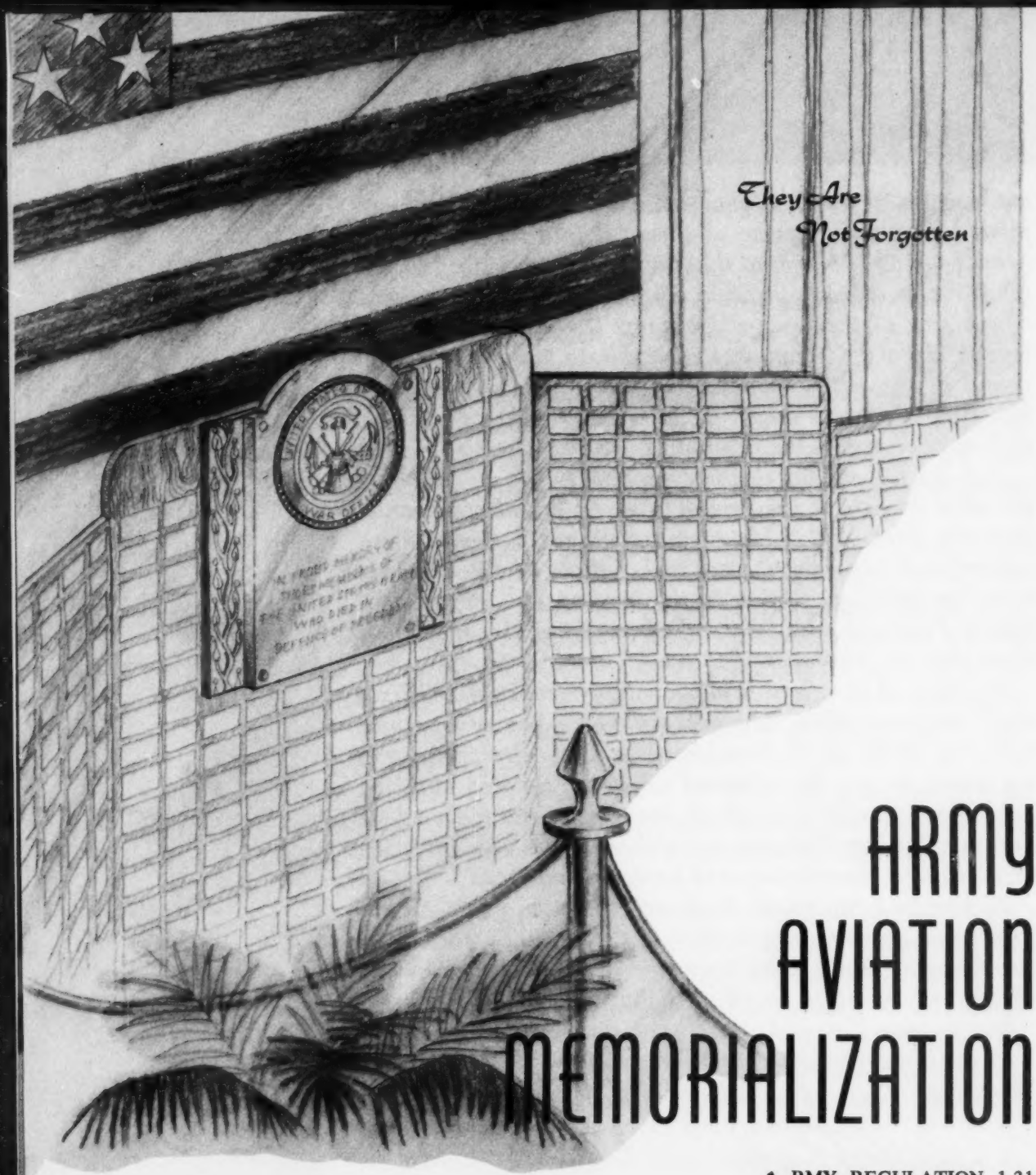
Another of the first Army aviation combat deaths was Staff Sergeant Allen, who was killed by one of our own outgoing shells on the beachhead at Anzio. He was one of my pilots in the 1st Armored Division. He was climbing out toward the front when an outgoing round from a tank battalion hit him. This was one of the units we used for firing artillery type interdiction and harassing missions.

As best as I can recall, these were the men who were the first Army aviators to give their lives in combat. Thank you for the opportunity to participate in the Memorial issue and to pay my respects to all who have given so much for Army aviation.

Sincerely,

John W. Oswalt

Colonel, U. S. Army (Ret.)



ARMY AVIATION MEMORIALIZATION

Lieutenant Colonel William H. Howell (Retired)

Curator, U. S. Army Aviation Museum
Fort Rucker, AL

ARMY REGULATION 1-31 established an Army-wide program to memorialize Army personnel killed in connection with cold war activities subsequent to 1 July 1958. The U. S. Army Avia-

tion Center at Ft. Rucker, AL, was designated to memorialize those who were killed while serving with aviation. Major General John J. Tolson, then commanding general of the Aviation Center, dedicated the memorial on 18 October 1966 and designated the U. S. Army Aviation Museum at Ft. Rucker the responsibility for its maintenance and display to the public.

The memorial stands in the Aviation Museum displaying individual brass nameplates which have been received periodically from The Adjutant General at Headquarters, Department of the Army. The nameplates are mounted on the mahogany background of the memorial.

The earliest date of deaths show Chief Warrant Officer Joseph A. Goldberg, Specialist 5 Harold L. Guthrie and Specialist 5 James E. Lane, all killed on 15 July 1962. The most recent name to be added is Sergeant Thomas D. Young, who was killed on 15 December 1971. During this 8½ year period there were 1,400 nameplates affixed to the memorial and more than three-quarters of a million Museum visitors have had the opportunity to view it and gain more appreciation for Army aviation and the men who have lost their lives performing their missions in combat.

In 1942 organic light aviation was first authorized in the Army Ground Forces. The Field Artillery Battalion's TOE (table of organization and equipment) authorized two liaison pilots with strong emphasis that these two pilots be Field Artillery officers who had been trained to fly aircraft. This qualification was intended to enhance their value as Artillerymen only and not to mark them as "special" in any way. Even as light aviation was authorized in other branches of the Army, great care was taken to emphasize that aviators in the Army were officers with a "specialty" and the primary prerequisite for flight training was to be an officer of a branch authorized aviation.

From 1942 until the end of World War II approximately 3,000 Artillery officers and enlisted men were trained as liaison pilots. Even though beginning in 1946 other combat arms were authorized light aviation, only 2,000 pilots were trained up to 1950. In those days aviation training was considered detrimental to the career of young officers so they chose more promising specialties such as Rangers, Airborne, etc. The lack of interest in aviation in the Army as a whole found the Army with only some 1,400 pilots within reach for immediate service at the beginning of the Korean War. Fewer than 100 aviators were available for combat missions during the first weeks of the war.

It was during the Korean War that Army aviation began to come of age, at least so far as being recognized as a valuable asset to increase mobility in a country with poor road nets.

As a result of the Korean War experience, the Army became more interested in Army aviation to the extent that the Air Training Department located at the U. S. Army Artillery School at Ft. Sill, OK, became the Army Aviation School and in less than 2 years was moved to then Camp Rucker. There quickly followed the creation of the Army Aviation Center and the post was given its permanent designation, *Fort* Rucker.

With its own Center and School, Army aviation began to stand out in the Army as an entity and also began to attract officers of all grades from lieutenants to generals as a career enhancement rather than a detriment.

Although early Army Air Corps pilots have been memorialized on various Army posts, some of which later became U. S. Air Force bases, Army aviators were not memorialized until the Army Aviation Center was created in 1954. Then some of the auxiliary airfields began to be named in memory of Army aviators, enlisted men and a few career civilian flight instructors.

Several years ago the U. S. Army Aviation Center implemented AR 1-33 by establishing the Ft. Rucker Naming Committee consisting of the staff directors and other heads of activities. This committee functions under the direct supervision of the deputy commander at Ft. Rucker. This committee has named most of the permanent buildings and auxiliary airfields after deceased officers, warrant officers and enlisted men who have made significant contributions to Army aviation both in combat and in peace. This permanent committee will continue to memorialize deceased Army aviation personnel by naming bachelor officer quarters, bachelor enlisted quarters, classrooms, etc., in their honor so that their memories are perpetuated for the inspiration and respect of future generations of Army aviation people.

These new permanent buildings have brass plaques located in various places on the building bearing the name of an Army aviator or crewman of whom the Army is proud and a family who is proud and grateful for this recognition. It would seem that the buildings would be identified by their names —but not yet. They still are identified in the telephone and office directories, student schedules and many other references by obscure building numbers. However, these buildings eventually will be referred to by these names representing heroism, bravery, devotion to duty and contributions to Army aviation. Then the Army aviation memorialization program will have real meaning in its own home.

SHELTER, PORTABLE AIRCRAFT MAINTENANCE

Story by Captain Cecil A. Green
Photographs by Lieutenant Brian N. Kanof

MOBILITY is the keystone to Army planning, and nothing has done more to make the Army mobile in the past 70 years than has the emergence and successful employment of Army aviation's fixed and rotary wing aircraft.

But, as airplanes and helicopters become more sophisticated and tote more technical weaponry, mobility is directly related to the quality and speed of maintenance that those aircraft receive. Thus, the logical action in future conflicts is to put quality maintenance in a mobile configuration and move it to where the need is greatest. And that's where the SPAM comes in—for the SPAM may become a nearby place where an Army aviator can get maintenance pulled on an ailing helicopter or airplane.

To many World War II-era GIs, spam was a mealtime meat item dished up by the mess sergeant, but today SPAM is the Army's acronym for "Shelter, Portable Aircraft Maintenance." The SPAM is actually a series of eleven flattop buildings that can be folded up somewhat like a roadmap for easy carrying or delivery to isolated locations. The buildings are composed of a resin-impregnated paper honeycomb bonded between sheets of aluminum.

Currently, the concept of the buildings is being field tested by MASSTER (Modern Army Selected System Test, Evaluation and Review) at Ft. Hood, TX. The buildings which compose the SPAM have been in the Air Force inventory for several years, but the MASSTER test is the first in an Army field situation.

The importance of the SPAM concept, according to the test project officer Major Kenneth W. Allen of MASSTER, is that an entire aircraft maintenance complex can be set up almost anywhere and provide direct support for Army aviation units.

The SPAM is capable of such flexibility because nine of the eleven buildings fold up into easily handled boxes that can be loaded on cargo airplanes, airlifted by helicopters, loaded on a ship or placed on a set of road wheels and pulled by a truck.

The other two buildings in the SPAM complex are small enough to transport the same as the larger SPAM units but they are not expandable.

Each folded-up building is 8 feet high, 8 feet long and slightly over 13 feet wide. When the sides, floors and ceilings are unfolded and expanded, the 8-foot length becomes 22 feet, providing about 286 square feet of floor space inside. Also, when the buildings are closed up all the workbenches, tools, machinery, lighting and air conditioning are still inside. This means that the SPAM can be functional soon after it is delivered to a new location.

When set up the SPAM offers all the maintenance services found in most major repair shops. The nine foldable buildings house a prop and rotor repair shop, an airframe repair shop, a turbine engine repair shop, an electrical shop that can repair instruments, an armament shop, a tool crib that houses special tools, a powertrain shop, a complete machine shop and a weapons fire control shop, where other intricate instruments are repaired.

The two smaller buildings are used for hydraulic repair and welding.

The concept of the SPAM may mean much for the mobility of such direct support maintenance units in the future because the present mobility is usually limited to vans on the back of large trucks. Thus, the mobile maintenance shops now can only go where their trucks can go. But, the SPAM can go anywhere a helicopter, plane, ship or truck can go.

Additionally, the SPAM build-

With floor and ceiling unfolded, members of E Troop, 7th Squadron, 17th Cavalry, 1st Cavalry Division, swing up the end panel of one of the SPAM buildings. When completed the building will house a maintenance unit. With end walls, ceiling and floors folded, the building may be moved by aircraft.

CPT Green has been information officer for the MASSTER program since September 1973. He received his B.A. degree in 1967 and his M.A. in mass communications in 1972. He has attended the AG basic and advanced schools, the Defense Information School and the Advanced Public Relations School

ings can be dollied around on the ground when the road wheels are attached or a rough terrain forklift can handle them easily, which means that they can be placed in more secure areas than can the larger trailer vans. This additional on-site mobility also means that the SPAM units can take better advantage of natural camouflage . . . not to mention that their size is easier to camouflage than is the large vans.

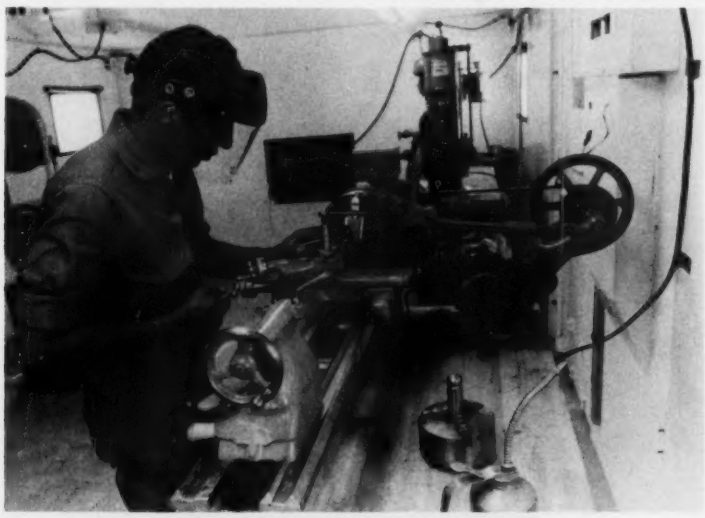
And emplacing the SPAM buildings on uneven terrain is no major problem either. Each unit is equipped with eight leveling jacks that can be individually adjusted to compensate for such things as the slope of the land or small depressions and rises. Each building also has a device somewhat like a carpenter's level to indicate when the floors are level and ready for business.

The working area in the SPAM is greater than that of conventional vans and the SPAM units are all on ground level while the vans are usually 3 or 4 feet off the ground. This means that repairmen using the vans have to climb several steps, often with heavy equipment; with the SPAM the men are able to come directly in the door.

Modifications to the SPAM during the MASSTER test also have helped improve some of the working conditions. For example, the engine repair shop and powertrain shop have a large I-beam in the ceiling to support a chain hoist. However, workmen soon discovered that there was a problem getting heavy loads inside the shop so the hoist could be used.

"Therefore, we installed a crane at the edge of the door in each shop," MAJ Allen explained, "and this crane can swing out about 5 feet, which is far enough to reach outside and pick up heavy loads with its 2000-pound hoist. This little addition has already saved us a lot of time and energy."

The air conditioning system in the SPAM has been simplified for field usage. Originally, each SPAM building had its own large, exterior air conditioning unit with big, circular ducts snaking around the complex. Now, holes have been cut in the end panels of each building and two window-model cooling /heating units have been installed. When each building is readied for movement, the air conditioning units are simply taken out of the end panels and placed in the folded-up building.



A machine shop housed in one of the SPAM buildings is useful when making repairs under field situations. Here, SP4 Javier Soto uses a lathe to repair some helicopter parts. The machine shop is just one of 11 activities housed in SPAM buildings

Another phase of the MASSTER test involves the tools that are used in the SPAM shops. So far there are about 40 different shop sets in the Army inventory that can be issued to an aviation unit for direct support maintenance. Thus, there is a need for standardization to eliminate duplication and get tools for use in each kind of shop. Also, it must be ensured that the types and numbers of tools needed are there. But, care must be taken that too many tools, which add extra weight and spoil the airmobile concept of the SPAM, are not added.

This phase of the test could possibly be done on paper with some degree of accuracy, but it also is important for the user in the field to work with the different tools and report what he needs and uses on a day-to-day basis.

Therefore, the tool study will run for several months so mechanics and other repairmen can do their regular work and hopefully encounter all the different jobs authorized at a direct support maintenance level.

The troops testing the SPAM's capabilities at Ft. Hood are from E Troop, 7th Squadron, 17th Cavalry of the 1st Cavalry Division. It's important that tests be run with regular troop units. We're less "engineer-oriented" than some other test organizations—we're not that interested in the foot-pounds of pressure that a particular section of the floor can support. We just want to know if the SPAM can do its job when used by troops in the field.

YOU ARE INVITED

to join the

UNITED STATES ARMY AVIATION DIGEST

in its projected coverage of the following subjects:

Jun Jul Aug Sep	**TACTICS**
Oct	**TRAINING**
Nov	**ACCIDENT PREVENTION**
Dec	**AIR TRAFFIC CONTROL**
Jan	**RESEARCH & DEVELOPMENT**
Feb	**M A S T**
Mar	**MAINTENANCE**
Apr	**LOGISTICS**
May	**ARMAMENT/WEAPONS**
Jun	**HISTORY**
Jul	**WEATHER**
Aug	**INSTRUMENT FLIGHT**

If you can contribute articles, photographs, art, anecdotes or information relating to the listed themes, please fill in the following. Tear it out, fold as indicated on the next page and mail it. Official units, agencies, etc., are welcome to contribute. So are individuals (civilian and military) and private industry

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VIEWS FROM READERS

Continued from page 11

Sir:

The following letter is intended for "Views From Readers" and does not reflect the policy or view of the California Army National Guard.

After reading "Just Pure Hell" in the September issue of the DIGEST, I would like to express a few personal opinions concerning the Army's protective flight clothing and equipment, and its policy regarding the proper way to wear and utilize this gear.

First, I would like to address the flight clothing and equipment itself. The introduction of the Nomex flight suit has made a significant impact in the battle to reduce thermal injuries due to postcrash fires. However, because the Army elected to issue a two-piece Nomex suit instead of the single or one-piece flight suit, certain problems have been created.

Among the early problems with the two-piece suit were (1) zippers that failed or ripped out in the crouch; (2) buttons that dropped off the pants and shirts like dead leaves from a tree; (3) not properly locating the pencil holder on the sleeve of the shirt; (4) flaps of compartments on the pants that interfered with the movement of the collective in LOH aircraft; (5) shirttails that were too short and did not remain tucked into the trousers; etc.

Although some of these problems have been corrected, it must be pointed out that certain areas will never be properly fixed until the Army abandons the two-piece flight suit to satisfy those senior commanders who insist it must "look like the fatigue uniform." A flight suit should be a single unit in order to provide maximum protection to the aviators and crewmembers, and eliminate certain design deficiencies which have been identified in recent Army aviation safety publications.

A recent FLIGHTFAX published by the U.S. Army Agency for Aviation Safety described serious burns received by an enlisted crewmember because his Nomex shirt was not properly tucked into the trousers. One of the reasons why it became common practice to wear the shirt out of the trousers was the continuous retucking being accomplished by crewmembers after either performing preflight inspections/maintenance or just bending over to unload the aircraft or similar stretching movement. True, this retucking is not a problem for pilots who generally remain stationary while actually in flight, but a one-piece suit will eliminate this problem for crewmembers. Additionally, it must be commented that one-piece flight suits are just more comfortable than two-piece suits.

Now, let's address the age old problem of either tucking the trousers into the leather boot or wearing the trouser legs over the boot as designed. The Army's Natick Laboratories, in a letter to then USABAAR in October 1970, stated that the trouser legs should be bloused over the boot with the adjustment tabs tightly secured over the boots. The letter also noted that the boot is designed basically so that trouser legs should not be worn inside the boot tops and still maintain a proper fit.

In the article "Just Pure Hell," CPT Nowlin pointed out that his Nomex trousers provided excellent protection except for an area where the Nomex fit too closely to his skin on his left leg because his trousers were tucked inside his boots.

Who determines how the flight suit is to be worn? Well, that decision is left with the major Army installation/post commander. And, there is no standard or consistent policy Army-wide. Some commanders permit the trouser legs to be worn over the boot, while others require the legs to be tucked into the boot. Obviously, the first question asked by Army aviators is, What does the home of Army Aviation, Fort Rucker, require?

Unfortunately, the Aviation Center requires aviators and crewmembers to tuck in their trouser legs. The policy even requires aviation personnel wearing one-piece flight suits to tuck in the trouser legs. The time has come for the Army to formulate a standard policy for the proper way of wearing the present two-piece Nomex flight suit. This policy would not be deviated unless required by special circumstances.

This standard policy would make it mandatory for sleeves down and snug around the flight glove; the shirttail tucked into the trouser; the trouser leg adjusted over the boot; and the front of the shirt fully closed and the collar worn up with the tab secured over the neck opening.

As far as the other protective flight equipment is concerned, if properly worn it will provide a maximum degree of protection. This includes the SPH-4 helmet, flight gloves and leather boots.

Naturally, a one-piece Nomex flight suit would eliminate most of the clothing problems. And besides, think of the money the Army would save on replacing those buttons.

Captain John H. Schleimer
Aviation Safety Officer
California ARNG
Los Alamitos, CA 90720

• The following was received from the Director of Army Aviation:

Dear Captain Schleimer:

The discrepancies you described regarding protective flight clothing and equipment are well taken. Since these problems have previously been recognized, the labs have addressed the problems. One can now find the newer Nomex with improved zippers, buttons that stay on, and longer shirttails. New Nomex trousers are tapered for better appearance and to reduce interference with collective sticks in LOHs.

Proper wearing of Nomex and other flight clothing has often been an emotional rather than a functional issue. It is true that commanders determine uniform policies within their commands and it has been noted that more consideration is being given toward wearing uniforms in a more functional and safe manner.

The Army is presently committed to two-piece Nomex. While it is generally considered that a one-piece suit is superior, there are some advantages inherent in a two-piece design:

a. A greater number of sizes can be accommodated because shirts and trousers may be fitted individually.

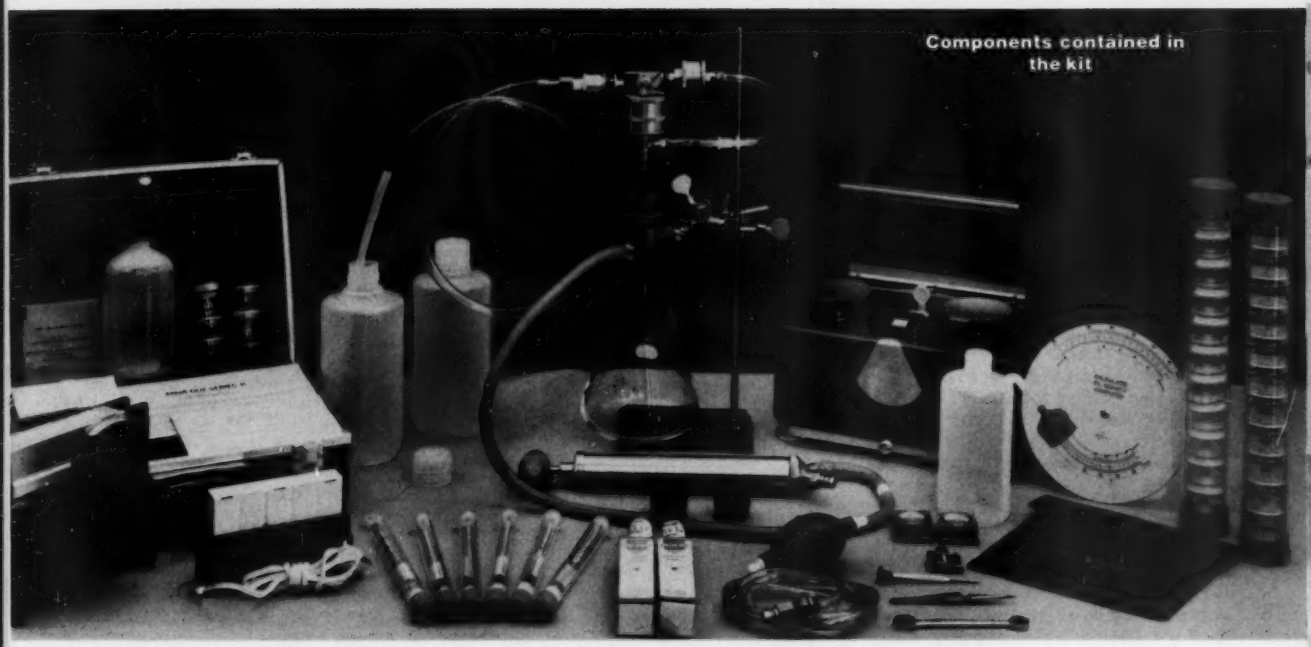
b. Trousers may be removed independently in cold climates to facilitate certain body functions.

c. In hot climates the shirt may be removed when performing nonflying functions.

d. Damage to either trousers or shirt does not cause the whole flight suit to be discarded.

The issue appears to be appearance rather than the capability of either suit to provide better protection. Appearance of flight crewmembers is an issue which will probably never be resolved to everyone's satisfaction. The Aviation Directorate and Life Support Equipment offices are concerned with this problem and are monitoring and promoting changes to Nomex flight gear to improve its basic function of protection and also its appearance.

James H. Merryman
Brigadier General, GS
Director of Army Aviation



Components contained in the kit

New Fuel Contamination Test Kit

Myron Wolfe, DAC

A NEW FIELD Fuel Contamination Test Kit has been developed by the U.S. Army Mobility Equipment Research and Development Center, Ft. Belvoir, VA. The kit consists of an aluminum case approximately 27 inches long by 21 inches wide by 13 inches high, not including the handles on each side. The kit has a pressure equalizer valve. The total weight including all equipment is 60 pounds.

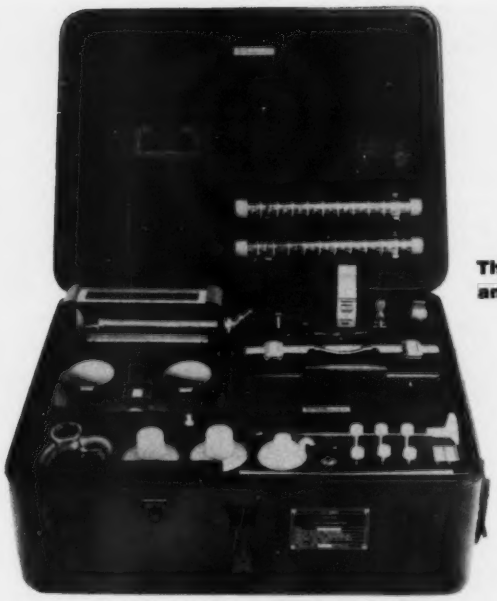
All necessary equipment is encased in foam within the case. The equipment provides for three primary tests: API Gravity, Free water to 1.5 ppm by the Aqua-Glo Method, and Solid Contamination by the ASTM D2276 Method.

The kit requires no outside utilities and can be manually carried by one or two men. It can be used in a laboratory, field, pipeline or filter separator (equipped with a quick disconnect fitting).

Reports from the field at this time indicate that the new Fuel Contamination Test Kit will be an invaluable tool for detecting free water and/or sediment in fuels. It is easy to handle, easy to use and is capable of furnishing extremely accurate results. The reliability of the equipment was found to be extremely accurate when compared to the base laboratory equipment.

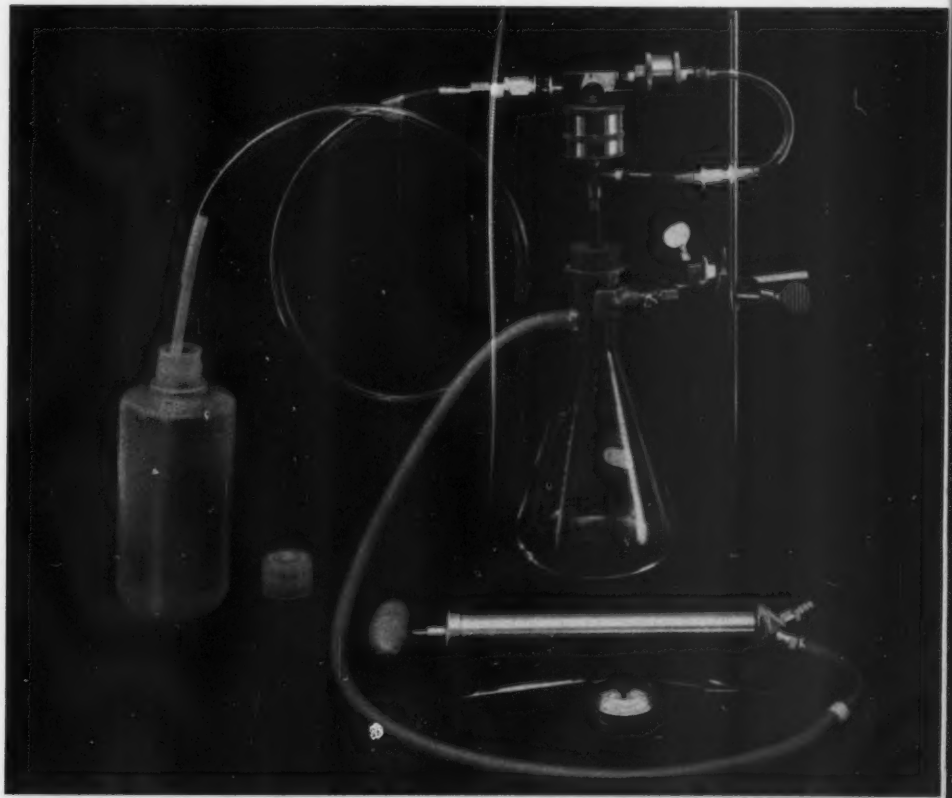
The kit is now going through the process of being assigned a Federal stock number and line item number. It will become part of TOE equipment through type classification.

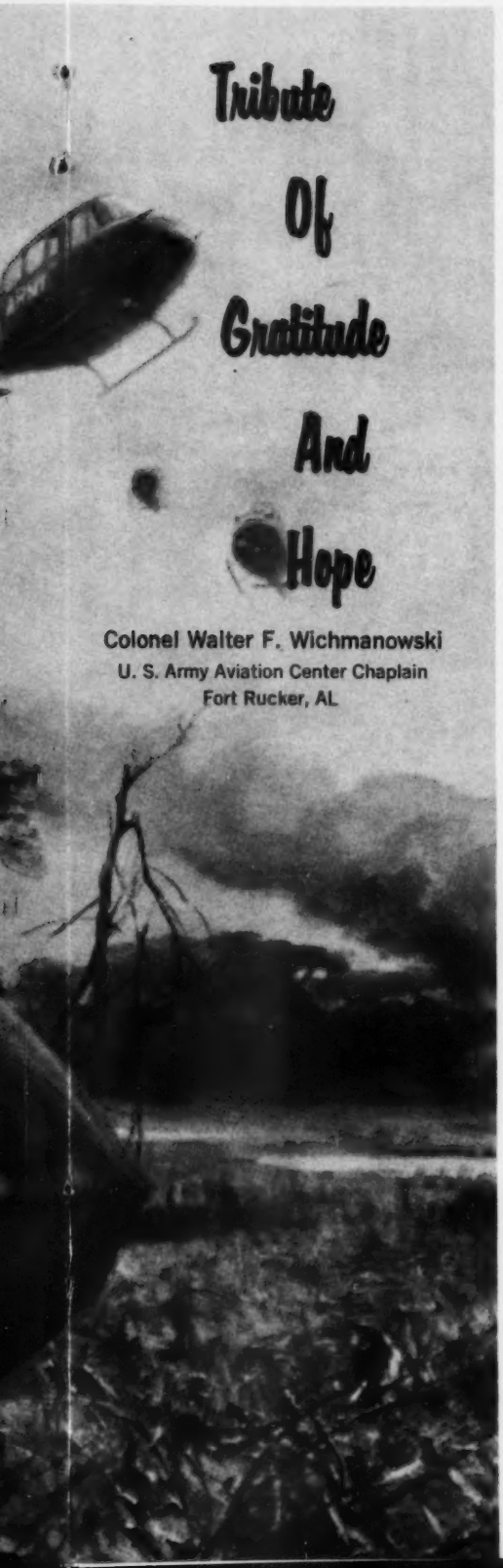
Mr. Wolfe is commodity engineer for Fuels Handling Engineer Branch, U. S. Army Mobility Equipment Research and Development Center, Ft. Belvoir, VA



The complete kit and container

The kit set up as required for laboratory operation





Tribute Of Gratitude And Hope

Colonel Walter F. Wichmanowski
U. S. Army Aviation Center Chaplain
Fort Rucker, AL

THIS IS A PROUD moment for Army aviation, but its fullest and richest appreciation will be realized through vision which embraces both past and future.

In backward glance, one sees not a faceless body called Army aviation, but a great multitude of faces —personalities—who, in the hour in which the inception and development of Army aviation rested in their hands, were not found wanting. Minds keenly alive to the potential of Army aviation, they eagerly seized upon its inherent promises; and imaginatively, boldly, courageously and with unyielding determination labored unstintingly to fulfill its promises at any price, even that of life itself. Many sentiments are evoked by this view of Army aviation past: admiration, praise, affection and, ever so profoundly, a gratitude which addresses itself to the great and good men, who comprised the very spirit and body of Army aviation, and to the Lord and Creator of each one of them because He brought them into being and charged them with the awesome responsibility of unselfish and dedicated service to their nation.

How easy it is in the same effusion of gratitude to pivot our vision to Army aviation's future with all its promises and challenges and to do so with great hope and complete confidence. There are many reasons to anticipate that the succession of great and good men will continue, but none so impressive as the conviction that the Master Designer has not found His design for them to have become either faulty or obsolete.

To have viewed Army aviation past and future is to have sighted upon two points of reference so as to identify as accurately as possible the present with all its dignity, responsibilities, prerogatives, opportunities and challenges. The past is history well documented and indelibly recorded; the future with all its promises and challenges is yet to be recorded, but can be only after the present is faithfully recorded. What excellence will present Army aviation enjoy as it passes into history? It seems that it is not too much to hope for that it will not only bear the characteristics of Army aviation past but also will be matured and strengthened so as to remain a living legacy of noble service wholly worthy to be ceded to Army aviation future.

Convinced that all men past, present and future live in the presence of the unchanging God, it is much more than opportune on this occasion of tribute paid to Army aviation past, that we should speak our thanks to our Creator, sounding also our hopeful petitions that Army aviation present and future may know no less of the favor which He showered upon the great and good men who are its past.

Our heavenly Father, praise and gratitude issues eagerly from our lips for the great and good men You have called to our nation's service in Army aviation. Hear now our prayer that Army aviation future may one day inherit through us the legacy of Army aviation past. Make our hearts pure, our wills strong, our courage unfaltering and our purposes noble. We thank You, Father, for this privilege of national service. May we never be found wanting in our response to Your call to greatness and goodness. Amen.

An ATC Clearance Takes The Worry Out Of Being Close

Hubert C. Pate, DAC

Academic Instructor
Department of Academic Training
U. S. Army Aviation Center

Army one two three four five cleared to Pensacola Regional Airport via Hartford two departure, Crestview transition Victor one ninety eight Gonzales intersection. Maintain four thousand. Departure control frequency will be two three seven point five squawk zero four zero zero just before departure

exists. It is the responsibility of the pilot to accept or refuse the clearance issued. In order to be assured of the proper separation the pilot must operate in strict compliance with each part of the clearance. If the pilot cannot comply with any specification of a clearance, he should immediately notify ATC so that an amended clearance may be issued.

The most important guiding principle to remember is that the last ATC clearance received has precedence over related portions of the previous clearance. An amended route does not affect the altitude (unless the altitude is also amended) or vice versa.

The separation provided by compliance with an ATC clearance is in accordance with standards established for the type of air traffic control being used. Conventional control (nonradar) utilizes longitudinal (time spacing), vertical (altitude spacing) or lateral (distance spacing) separation. This emphasizes the importance of proper position reporting by the pilot in order for the controller to be able to determine the relative positions of the aircraft under his control.

Radar control provides more positive lateral and longitudinal separation by determining the position of each aircraft in reference to the other. Vertical separation,

JUST WHAT IS an ATC clearance? Just what is air traffic control? Who are these voices which have no faces that we hear and talk to?

An air traffic clearance is an authorization by air traffic control for the purpose of preventing a collision between known aircraft, for an aircraft to proceed under specified traffic conditions within controlled airspace. Air traffic control is a service provided for the purpose of promoting the safe, orderly and expeditious flow of air traffic including airport, approach and enroute traffic control service. The voices with no faces represent the highly trained air traffic control specialists who are responsible for providing the air traffic control service.

An ATC clearance is really a contract. The party of the first part (ATC specialist) agrees to provide separation from known air traffic for the party of the second part (pilot) if the party of the second part complies with the clearance issued by the party of the first part and follows approved ATC procedures.

It is very important that there be complete understanding between the controller and the pilot on the meaning of each item of the ATC clearance. There should never be any guessing games about what the controller or the pilot is expected to do.

It is recommended that the pilot make a written record of clearances at the time they are received, and even though there is no requirement for reading back a clearance (unless requested to do so) the pilot should verify, by a readback, any portions which are complex or about which any doubt

in this case, is normally provided by assigning the aircraft different altitudes. Controllers use enroute holding, rerouting or altitude changes when traffic conditions are such that proper separation standards cannot be maintained without change of relative position of one or more aircraft.

An initial ATC clearance is issued for an aircraft to depart and proceed to its destination airport or to some point along the route toward its destination. The farthermost point of the initial clearance is determined by traffic conditions. Amended clearances are issued enroute as necessary for proper separation and control. The clearance items are issued in a standard sequence. An understanding of the clearance sequence and clearance terminology is of great value to the pilot in receiving, recording, understanding and complying with clearances issued by ATC.

Here is a look at the sequence and some of the terminology used. The sequence is as follows:

a. aircraft identification
b. clearance limit or approach procedure
c. departure procedure or SID
d. route of flight
e. altitude data in order flown
f. holding instructions
g. any special information
h. frequency and beacon mode information

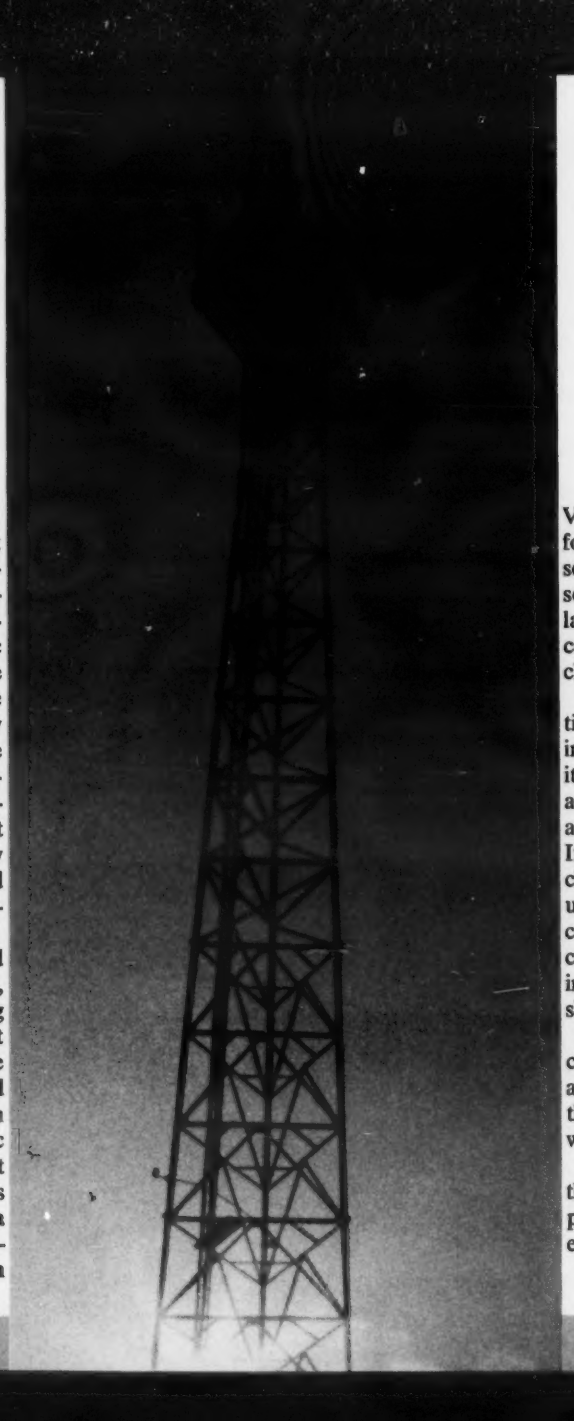
Any one clearance may not contain all possible items of the complete sequence, but the items issued should be given in the proper order. The significance of these items is as follows:

• **Aircraft identification:** The radio call

sign of the aircraft cleared.

• **Clearance limit:** The farthermost point to which the aircraft is authorized to proceed without further clearance. When possible, the destination airport will be specified as clearance limit. When traffic conditions do not permit clearance all the way, the aircraft will be cleared to some control point short of destination. Normally the controller will issue further clearance at least 5 minutes before the aircraft arrives at the clearance limit, but if the aircraft arrives at the clearance limit without further clearance (except when two way radio failure occurs) the pilot is expected to enter holding and request further clearance.

• **Departure procedure or SID** (standard instrument departure): When necessary, direction of takeoff/turn or initial heading to be flown after takeoff will be specified at airports where airport traffic control service is provided. These items will be specified only after obtaining the information from the pilot at airports where airport traffic control service is not provided. At airport for which standard instrument departures have been established an SID, including a transition, will be assigned when appropriate. If a pilot does not wish to accept an SID he should so inform ATC.



VFR conditions on top, the pilot assumes four additional responsibilities: his own separation from other aircraft; altitude selection in accordance with the semicircular rule for VFR flight; maintaining VFR conditions; and advising ATC of altitude changes.

• **Holding instructions:** Holding instructions are not normally included in the initial clearance. If the aircraft arrives at its clearance limit without additional clearance, the pilot is expected to begin holding and immediately request further clearance. If there is no holding pattern charted at the clearance limit fix on the enroute chart used, he should hold standard using the course on which he arrives as the inbound course to the fix. If there is a charted holding pattern at the clearance limit fix, he should hold in the charted pattern.

If holding instructions are issued, the clearance will be different for fixes with and without charted holding patterns. If there is no pattern charted, the following will be issued:

• Direction of holding with respect to the fix, specified as one of the eight general points of the compass, i.e., north, northeast, east, etc.

• Name of holding fix.

• Radial, magnetic bearing, course, air-

• **Route of flight:** The aircraft is issued routing to enable it to proceed to its clearance limit. Routing information includes one or more of the following: airway, route, course, heading, arc (if an approach procedure using distance measuring equipment) or vector. If any part of the route beyond a short range clearance differs from that filed, the clearance must include the routing to be expected in a further clearance. The expected routing must provide the routing which will carry the aircraft to its destination or back to its filed route.

• **Altitude data:** Normally only the altitude for the first leg of flight is issued initially and amended altitude clearances are issued enroute as necessary. There are three types of altitude assignment:

• *Maintain:* Used to indicate that the pilot must maintain the assigned altitude until cleared to leave it. In the initial clearance the term "maintain (*altitude*)," it is obvious that the pilot must climb to the altitude. Enroute changes will specify "climb/descend and maintain *altitude*."

• *Cruise:* A word used instead of "maintain" to signify to the pilot that climb to and descent from the assigned altitude may be commenced at his discretion without further clearance from ATC. "Cruise" is normally used only for short flights in uncongested areas and is authorization for the aircraft to proceed to and make an approach at the destination airport.

• *Maintain VFR conditions on top:* Assigned only at pilot's request in lieu of a specific altitude. When cleared to maintain

way number or jet route on which the aircraft is to hold.

• Left turns if nonstandard pattern is to be used.

• Outbound leg length in nautical miles if DME is used, otherwise length in minutes.

• Expect further clearance time or expect approach clearance time as appropriate.

If there is a charted holding pattern, the following will be issued:

• Cleared to (*name of holding fix*).

• Hold (*direction of holding*).

• Expect further clearance time or expect approach clearance time as appropriate.

• **Special information:** This includes any necessary information not otherwise contained in the clearance.

• **Frequency and beacon code information:** "Controllers will inform pilots of the departure control frequencies and, if appropriate, the transponder code before takeoff. Pilots should not operate their transponders until ready to start the takeoff roll or change to the departure control frequency until requested."

When you "roger" an ATC clearance it means that you have received and understood the clearance. It also means you are entering into a contract with the controller which is binding on both parties except when exercising emergency authority. A change may be made only with prior notice and agreement between both parties. The controller will clear; the pilot must adhere!

This article is reprinted from FLIGHT COMMENT, the Canadian Forces Flight Safety publication, with minor editing to clarify Canadian terminology for our readers

Games People Play

"CLEARING ONE'S Yard-Arm" (CYA) is a game by no means reserved for sailors or those of a nautical bent. CYA is played everywhere—even on Army posts—and is especially popular with supervisors. Football, golf and baseball may be seasonal favorites but CYA is a year round pastime . . . and anyone can play.

Most CYA players were originally participants in the more orthodox game of MA (Mission Accomplishment) and similarity between the two games can lead to some confusion. Still, the best way for a beginner to become proficient is to study the great games of the masters. Watch the experts at play and then decide for yourself. Is "Clearing one's Yard-Arm" the game of the future or is there more real satisfaction in "Mission Accomplishment"?

The account which follows is of an imaginary game, but it does indicate the extremes to which CYA players can go.

PITCHOUT'S PUNCHOUT

LT Pitchout was a keen young pilot, well liked by his unit buddies and a real ball of fire and fun on Friday nights and at unit parties. A gay young bachelor, he was enjoying his first tour after graduation from flight school. After all, at 22 years of age, who could ask for anything more than a sleek, fast aircraft in which to burn around the sky.

One bright spring morning LT Pitchout roared off on a routine low-level navigation training mission. Forty-eight minutes after takeoff a telephone call from a rather confused farmer's wife advised the post commander that a pilot was nursing minor injuries

in their farmhouse 185 miles northwest of the airfield. Pitchout had punched out moments before his aircraft crashed into a rocky, pine tree ridge. Post Rescue launched its helicopter and while Pitchout was being safely returned to the post, an accident investigation board was convened.

After burning the midnight oil for a couple of weeks, the board members packed up and went home, leaving the wreckage, which was in a very inaccessible spot, under the pine trees. The bound volumes of their investigation, findings and recommendations were duly signed, sealed and sent on their merry way to travel from desk to desk, through the musty chambers of various headquarters until "Pitchout's Punchout" was finally laid to rest; another statistic on an accident rate graph, another colored slide for a commander's briefing.

Essentially, the board "found" that the young lieutenant's aircraft had been serviceable and functioning properly on impact. Pitchout was able to fill in the details. En route at 500 feet he had encountered some scattered stratus and had descended below the cloud. The scattered condition rapidly became overcast. Flying down a valley, Pitchout suddenly realized that he wasn't going to clear the ridge ahead. He attempted to pull up but decided to eject when he felt the aircraft contact the trees (the board congratulated him on his decision). The facts were quite clear and the board stated them as such. Pitchout admitted that he had "pressed on into deteriorating weather conditions which forced him to descend to maintain visual contact with the ground." However, some other observations were made by the investigating team:

- Pitchout had not had breakfast on the eventful day.
- Pitchout had just returned from two weeks leave and this was his first flight.
- Pitchout—along with others—had not signed the unit reading file for this quarter.

Now Pitchout was relatively inexperienced and had been in the unit less than a year. But his unit

"I KNOW THE WING FELL OFF... BUT ASK HIM IF HE'S HAD BREAKFAST."

commander, LTC Gung Ho, had a multi-year and a multi-type background. He was naturally perturbed at the loss of the aircraft and the close call for the young lieutenant. He became even more concerned when his commander arrived without warning and suggested, in the strongest terms, that Gung Ho shape up his operation or else. . . .

Obviously LTC Gung Ho's operation was somewhat "loose." Operations control seemed nonexistent. Pitchout had just returned from two swinging weeks with his new Corvette, and yet he arrived back at the post and set off on a low-level navigation mission without so much as a quick taxi test. Failing to sign the unit reading file is not a prerequisite for flying into the trees but it does indicate a somewhat lax attitude on behalf of all concerned. Fortunately, Pitchout was still alive, but a valuable aircraft had been destroyed. What could be done to prevent a similar mishap in the future? Half a mile of shattered airplane and an injured pilot adds up to lots of zeros below the line. The only plus factor in this type of occurrence is in its preventive value. If some lessons can be learned and then applied. . . .

This was the point where LTC Gung Ho could have

made the opening moves in a serious game of MA—but instead, a classic example of CYA developed.

HOW LTC GUNG HO PLAYED CYA

- LTC Gung Ho called a unit flight safety meeting.
- The ASO briefed on the dangers of continuing a mission in deteriorating weather conditions.
- The ASO exhorted the pilots to have breakfast every morning.
- Army flying manuals and regulations were to be signed as "having read." Furthermore, a new memo was placed on the unit bulletin board to be signed when the other publications had been reviewed.
- The visibility limits for low-level navigation missions were raised from 3 to 5 miles.
- All pilots returning from leave were to have a dual checkout.
- Pitchout was given a checkride by an SIP and returned to the flight line stamped "serviceable."
- A copy of the flight safety minutes was immediately sent to higher headquarters.

LTC Gung Ho was satisfied. He was fairly confident that the commander would be satisfied—and he was right. Young LT Pitchout was just an inexperienced "tiger" now duly chastised. The operation had been tightened up and everyone could sit back and relax. Even those flight safety characters could hardly complain. "Pitchout's Punchout" would soon be forgotten and the unit could carry on doing its job—just as before.

HOW COULD LTC GUNG HO HAVE PLAYED MA?

It is doubtful if LTC Gung Ho could start a real game of MA by himself. He probably needs some coaching from a higher supervisory level. Although his CYA moves are in the right direction, their value in most instances is negative.

The flight safety meeting was expected—although no one could remember when the last one had taken place. According to the minutes, all pilots were briefed about pressing on in bad weather (but two were on TDY, one was on leave and one was at school). Since special flight safety meetings were so few and far between, the response from the unit

"OKAY I'M COVER....ER... I MEAN.... YOU'RE SAFE TO GO."

might be "Ho hum, here we go—the old flight safety routine." Instant switch-off.

If LTC Gung Ho is to play MA he must evaluate himself and his whole operation in terms of the objectives established by the service. His attitude towards the flying operation creates the atmosphere in which his subordinates work. If Gung Ho merely pays lip service to the goals of the organization, then Pitchout's Punchout will be just one of many failures. Regular, programmed unit meetings with Gung Ho as a participating, decisive chairman should be the rule rather than a quickie CYA move when things go wrong. At one of these regular meetings the post flight surgeon could be on hand to give a forceful talk on the advantages or necessity of having some food intake before flying. The ASO "exhorting" aircrews to gobble up their Cheerios is hardly speaking with any authority.

What about signing all the pubs monthly instead of quarterly? Well, if Gung Ho's troops aren't signing every 3 months, it's doubtful that they'll be leaping up, pen in hand, to sign on the first of every month. Army flight manuals and regulations aren't getting

any more exciting. "Sign as having read" has come to mean "sign as having signed." Obviously some system must be established for aircrews to be advised of any changes in orders or procedures but not to the point where the pilot has writer's cramp before he reaches his aircraft.

Gung Ho increased the limits for VFR to 1,000 and 5. In effect he is saying to his pilots, "I don't trust you, you *Souls on Board.* You'll drop me if given half a chance." The next time someone tickles the trees, Gung Ho will say to the commander, "See that, and I even added on some extra limits for safety!" Of course the original limits were quite acceptable and provided an adequate operational training situation. If Gung Ho continues with this line of play, he will eventually fudge himself into a position surrounded by all his aircraft in a locked hangar.

The requirement for pilots returning from leave to have a dual checkout is worthy of an MA player (after a few days off a little dual with an experienced pilot never hurt anyone). But the real value of such a ride will depend again on the attitude of the supervisory staff which, in turn, influences the behavior of the line pilots. So often this checkride is just a mutual buddy-buddy trip. The flight becomes a casual touch-and-go practice rather than a professional workout to get rid of the cobwebs. (These trips also contain the seeds of disaster.)

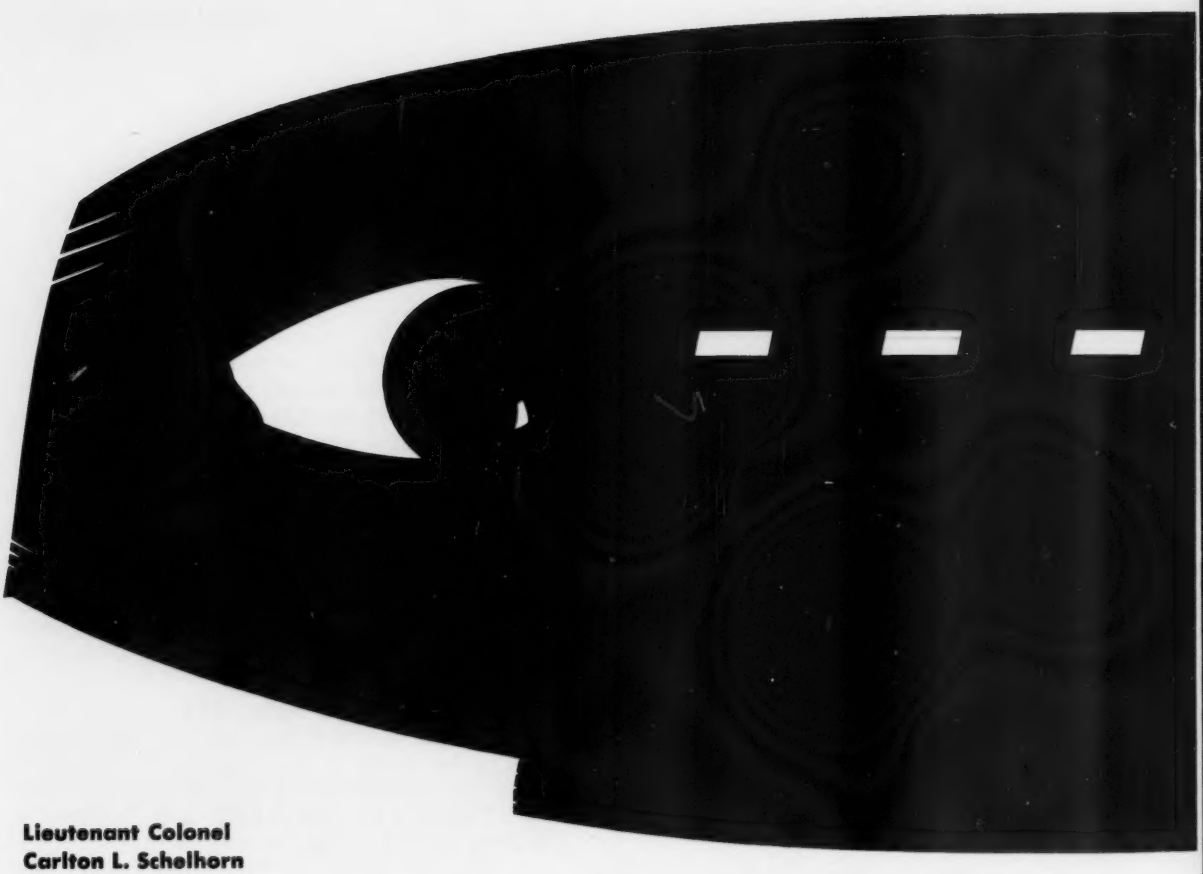
Finally, there's LT Pitchout, the prime mover in all this. He's now back in the harness—fit for duty. But is he? The flight surgeon has given him a clean bill of health and the SIP has given him a check-ride. No problems. What did Gung Ho expect? Did he think Pitchout would go and fly into the trees again —or forget to put his gear down? No, Pitchout may continue his flying career for 20 years and never have another incident—or he may not be so lucky. If he doesn't make it, he will become a topic for bar talk. The old heads will gather round, "He was an accident looking for a place to happen." "I knew he'd never hack it. Remember the time when he punched out?" These are the disappointing comments which mean that somewhere, sometime, someone sloughed off his responsibility to a young Pitchout. It isn't good enough to hope the young pilot will make it and then hide behind earlier prophesies when he plows in. Why didn't someone speak up earlier? Why didn't the experienced pilots take Pitchout aside and give him the benefit of their years behind the stick? Why didn't Gung Ho recognize that Pitchout needed some personal attention, training and regular evaluation. Why . . . ?

WHY LTC GUNG HO PLAYS CYA

This is the most difficult question to answer without having access to the clockwork in Gung Ho's head. The incredible paradox is that Gung Ho thinks he is furthering the aims of flight safety. In effect, he is doing just the opposite. Perhaps:

- Gung Ho turned to CYA because it was easier to play. Authority is lots of fun if you can get rid of the responsibility that goes with it. MA demands effort. In the case of Pitchout, it demands a careful appraisal of a pilot and an operation. This is a difficult task but essential if the squadron is to develop with any prospects of growth and success. Rather than search for the root causes and try to prevent a recurrence, Gung Ho found it easier to have his aircrews sign a few pieces of paper.
- Previous experience had convinced Gung Ho that it was best to look out for himself. A few extra restrictions on the unit wouldn't hurt and would prove he was "tightening up."
- The goals of the service had become secondary to personal objectives. Let's see, "I've got two more years to my 30 so if I can just keep my nose clean. . . ."

The sad story of Pitchout's Punchout and the ensuing account of LTC Gung Ho's gamesmanship are, of course, completely fictitious. No one would go to such great lengths to avoid facing up to responsibility. And by the way—how's your paper-signing hand?



Lieutenant Colonel
Carlton L. Scholhorn

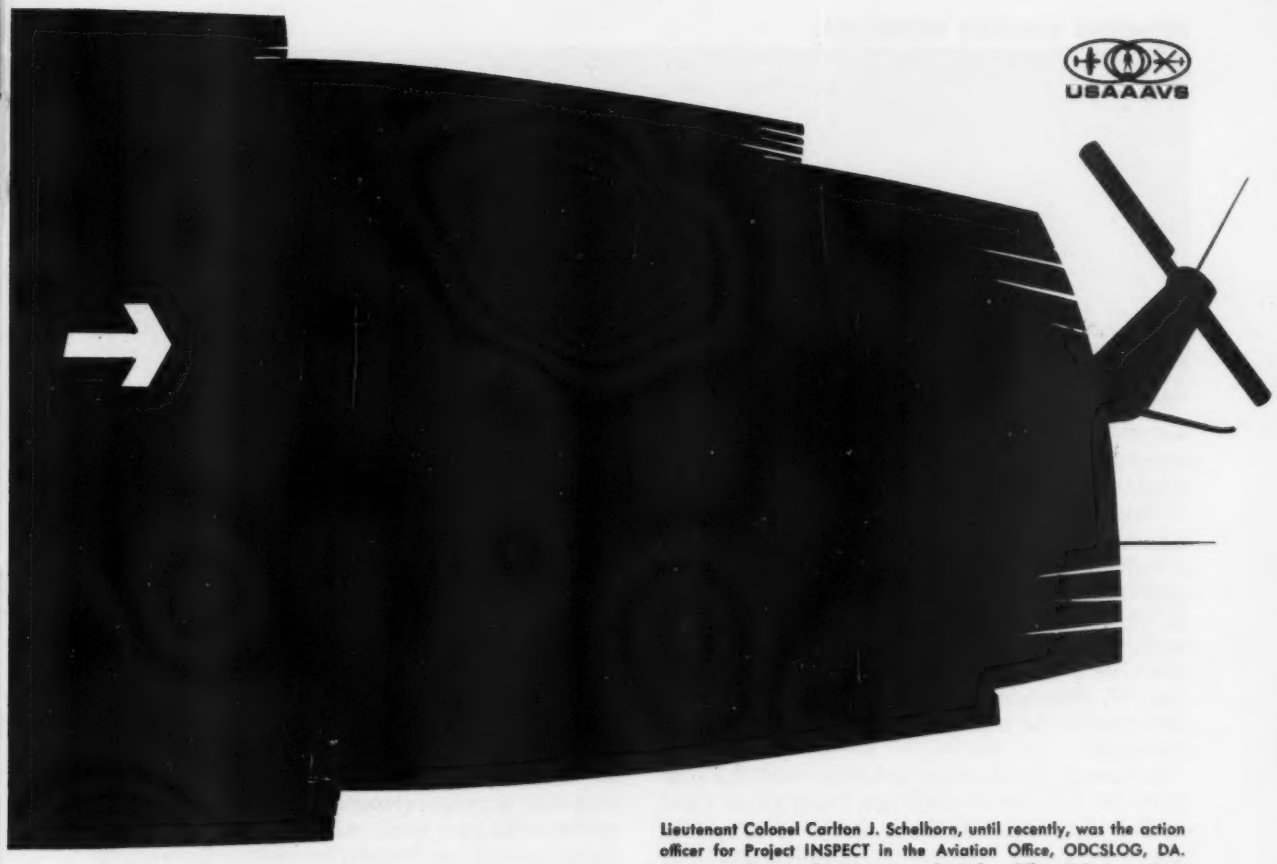
THE FUNDAMENTAL ARMY aircraft inspection policy in use for more than 20 years has been dominated by a system developed as the outcome of a study conducted in 1951. It was established for a fixed wing aircraft environment based on U.S. Air Force experience.

Though age alone is not, in itself, an indictment, one must consider "suspect" a preventive maintenance program that has witnessed the shift from almost totally fixed wing to a preponderantly rotary wing inventory, from reciprocating engines to turbine engines, and the resultant changes in roles and missions.

Two questions now arise: Is this system outdated and ready for change? Can aircraft inspection requirements be decreased and operational readiness increased without degrading safety, reliability or maintainability? A recently completed study says "yes" to both questions.

Contributing substance to the suspicion that current procedures have outlived their usefulness is the fact that while scheduled inspections have been, and continue to be, the single greatest contributor to maintenance downtime (NORM), no significant, sustained effort has been directed at scrutinizing, changing or validating these procedures. This is important when one considers the millions of dollars and man-hours that have been expended in reducing aircraft downtime caused by lack of parts. Dogmatic adherence to the "old line" becomes extremely questionable when, along with other factors, one recognizes that for many years Army aviation personnel of all grades and ranks have complained that aircraft are subjected to unnecessary maintenance actions—particularly the frequency and number of scheduled inspections. Consideration of commercial airlines' inspection policies also makes it apparent that Army aircraft preventive maintenance inspection systems are overdue for an intensive examination.

Broad and intensive operational usage of military helicopters during the last decade has resulted in the development of a wealth of data on helicopter main-



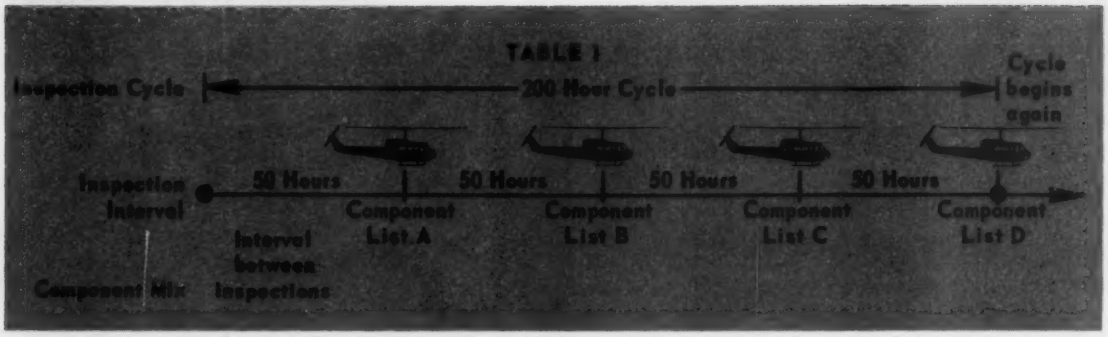
Lieutenant Colonel Carlton J. Scheihorn, until recently, was the action officer for Project INSPECT in the Aviation Office, ODCSLOG, DA. He is now Assistant for Aviation in the Safety Office, U.S. Army Materiel Command

tenance and inspection requirements. This information is contained within the maintenance records collected through military service reporting systems and from the know-how of skilled aircraft maintenance personnel. Piecemeal use of these data has increased operational readiness rates for aviation units and flight schools.

Many inspection schemes and organizational changes have been tried since 1966 to attain higher operational readiness rates and provide for a systematic examination of aircraft. The current Army Aircraft Preventive Maintenance Inspection System calls for scheduled inspections at predetermined intervals—the Preventive Maintenance Daily, the Preventive Maintenance Intermediate at 25 flight hours and the Preventive Maintenance Periodic at 100- to 300-flight-hour intervals. In addition, inspections may be necessitated by special situations, conditions or incidents.

This system of aircraft inspection has several disadvantages—

- It is estimated that the current system of scheduled inspections takes up 30 percent of all maintenance man-hours per flight hour required for the entire fleet.
- It produces wide fluctuations in inspection manpower requirements since the workload is not usually equitably distributed throughout the daily, intermediate and periodic inspections.
- As currently organized, the inspection system leads to excessive amounts of deferred maintenance since there is a tendency to postpone needed work until the aircraft is due for a periodic inspection.
- Deferred maintenance prolongs the amount of time needed for completing a periodic inspection, backs up aircraft in the inspection cycle and frequently results in a minor maintenance deficiency becoming a major problem.
- The current inspection cycle contributes to the uneven and inefficient use of personnel, support equipment and facilities because of poor workloading.
- The current inspection system is relatively in-



Inspection concepts

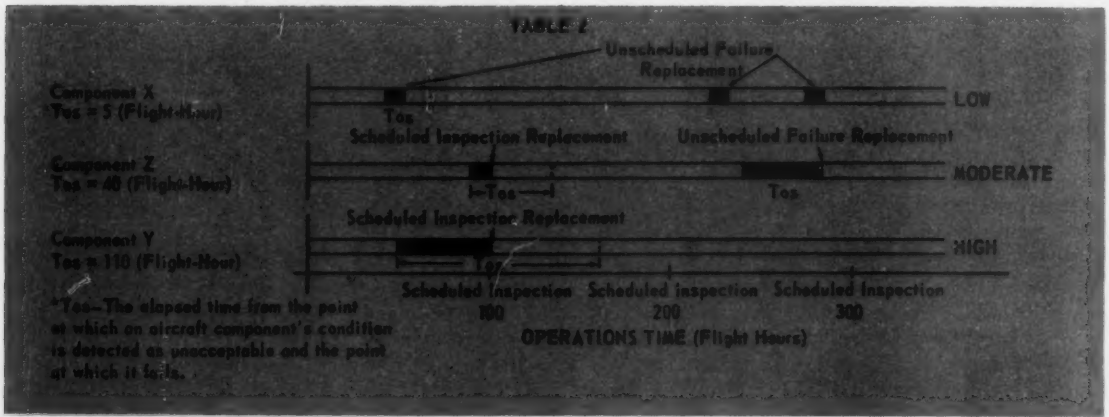
flexible and does not allow reasonable changes in inspection intervals when reliability and maintainability improvements would permit.

These disadvantages have been recognized. Phased inspection and running inspections have been tried in different units, some with good results. The principal obstacle that has not been overcome has been the inability to identify and control inspections to ensure they are performed when required. What is needed is a new scheduled inspection concept followed by deliberate action to prove it will provide a safe, reliable and maintainable aircraft with minimal downtime.

To address this problem, in March 1971, the U.S. Army Air Mobility Reseach and Development Laboratory (AMRDL) began a study, "Analysis of Army Helicopter Inspection Requirements," to evaluate existing aircraft maintenance scheduled inspection schemes and to develop an optimal inspection system. A computer model has been developed for comparison of alternative, practicable inspection schemes for Army light observation, utility, attack, medium cargo and heavy cargo helicopters. The primary objective of a new inspection concept is to make aviation units more efficient and to increase aircraft readiness, mission reliability, and maintenance cost savings.

The program is directed toward determining when and what to inspect on the basis of cost effectiveness. For purposes of the analysis, cost is expressed in terms of maintenance man-hours expended for scheduled inspections, preventive maintenance, unscheduled maintenance and the total maintenance requirement.

An optimum inspection system is one that provides maximum cost effectiveness. Many effectiveness indicators must be applied to an inspection system and are ultimately related to the comparative frequency of preventive repairs versus unscheduled repairs. Preventive repairs are preferred because flight schedule disruptions are less frequent, secondary damage due to premature failure is minimized and repairs are generally less costly. Moreover, unscheduled repairs due to failures reduce mission safety and reliability and decrease operational readiness. The important quantitative measures of an inspection system's effectiveness are the aircraft safety, reliability, maintainability and readiness attained with the system. Also



Inspection effectiveness

significant are such qualitative characteristics as the flexibility to permit planners to schedule inspections efficiently and the system's adaptability to diverse operating schedules, environmental conditions and mission demands.

For this analysis, all inspection concepts have been defined in terms of—

- Cycle—The period of time over which the aircraft is inspected.
- Interval—Number of inspections per cycle.
- Component Mix—Components inspected at each interval.

In describing the current UH-1 inspection scheme within this terminology, the cycle would be 100 hours with the interval being 25 hours. For a "phased" inspection system a portion of the aircraft is inspected at the end of each interval until all components are finally covered by the end of the final interval. The cycle is then repeated. Table 1 shows a 50-flying-hour interval with a 200-hour cycle-phased scheme. The time base for the cycle/interval consideration might be either calendar time or aircraft flying hours.

The selection of the cycle-interval-component mix combination was based on analyses of component failure characteristics. The characteristics considered included not only failure rates but, more importantly, the time before component failure during which deterioration of that component can be detected as unacceptable. Some components remain in a detectable deteriorating condition for a long time before failure occurs, while others fail suddenly without warning. Considering that failures are randomly distributed in time, the probability of detecting unacceptable deterioration is much greater for components that exhibit detectable deterioration than those that do not as shown in table 2.

The 100-flight-hour interval, 800-flight-hour cycle phased inspection should reduce direct maintenance man-hours without degrading reliability

One can readily see that with the many possibilities of phased, nonphased, periodic, intermediate/periodic, calendar and flying-hour-based schemes, along with the myriad of components involved for each aircraft, the matrix of consideration becomes cumbersome and difficult to manage. Approximately 40 different schemes were considered during the study. To assist in selecting the best scheme, a computer program called Model for Analysis of Vehicle Inspection Schemes (MAVIS) was developed to provide a systematic method for evaluating the cost and effectiveness of competing inspection schemes.

On the basis of MAVIS computations, the schemes that best accomplished the study objectives from a quantitative point of view are—

- The 50-hour/100-hour Intermediate/Periodic Inspection based on flying hours.
- The 30-day/120-day Intermediate/Periodic Inspection based on calendar time.
- The 100-hour/800-hour Phased Inspection based on flying hours.

A calendar inspection system offers a scheduling advantage over systems based on flight-hour cycles. Under the calendar concept, inspection schedules can be planned well in advance to avoid problems created by the random arrival of aircraft at inspection points. However, the calendar system suffers from irregular flight usage, causing aircraft with low usage to be inspected too often while those with peak usage are not inspected frequently enough. Moreover, the benefits of calendar scheduling can be maintained only if aircraft are inducted into calendar checks when they are due regardless of flying hours logged since the aircraft's last check. When required maintenance or repairs cause an aircraft to remain in calendar check for prolonged periods, the calendar time over which it is available for use before the next check is shortened accordingly. This situation inevitably produces lower overall aircraft availability and consequently higher operating costs.

Nearly all systems based on a flying-hour cycle can be adapted to a calendar interval. However, inherent disadvantages to calendar scheduling require that each application be considered individually, including such factors as the size of the opening unit, average usage, flight priorities and inspection turnaround time.

Phased inspection concepts offer several inherent advantages over the intermediate-periodic schemes. The most significant is the avoidance of severe disruptions to the aircraft operating schedule since the downtime at each inspection point is shorter than for a periodic inspection. Each inspection point represents a smaller, more manageable work package. Greater flexibility is also offered in aircraft checklist design, which can be made to cover selected areas of the helicopter at each interval. The range of specialist skills, test equipment and related needs required at any one inspection point can therefore be reduced, as can the number of personnel-induced problems created by the inspection function. For a long phased cycle, components with high reliability or long deterioration times can be stretched to longer inspection intervals.

TABLE 3
Comparison of 25/100 and 100/800 Component Mixes

	Components	Flight Hours	Component Inspections in 800 Flight Hrs
25 Flight Hr Interval	97	25	4,352
100 Flight Hr Cycle	156	100	
100 Flight Hr Interval	103	100	1,126
800 Flight Hr Cycle	42	200	
	26	400	
	82	800	

Plus—Extra flight readiness inspection

Based on this analysis the 100-flight-hour interval, 800-flight-hour cycle phased inspection scheme has been recommended as the most effective inspection concept for the five basic helicopter types considered in the study. It has been also recommended that this concept be evaluated in the field.

In order to test the concept, the Department of the Army (DA) established Project INSPECT. The project has two phases. Phase I involves—

- Development of a detailed inspection program and preparation of the individual related checklists for the UH-1H and CH-47C helicopters.
- Preparation of a field evaluation test plan to compare the schemes developed in the UH-1H and CH-47C inspection programs with the intermediate/periodic scheme currently applied to the aircraft being tested.

Phase II, which began in October 1973, consists of executing the 12-month field test plan developed under Phase I, analyzing the results, and preparing related reports.

In Phase I, the UH-1H data base was expanded and updated and the process to select the best inspection program for the UH-1H was reapplied. As a result of the analytical process, the 100-flight-hour interval, 800-flight-hour cycle phased inspection system was selected.

The UH-1H checklists were completed in April 1973 and validated as being workable, realistic, and capable of accomplishing the study objectives—increasing aircraft readiness and reducing maintenance cost.

Compared to the current inspection program, the new reduced aircraft maintenance downtime should provide a monthly reduction of from 2.5 percent for 25 flying hours to 7 percent for 80 flying hours, and reduce direct maintenance man-hours per flying hour by about one hour without degrading reliability. While relatively modest, the improvements represent a 43- to 45-percent decrease in maintenance downtime and a 20-percent decrease in maintenance man-hours per flight hours. Table 3 lists the current inspection concept and the number of components to be inspected. It should be noted that the operational rates are for maintenance downtime only.

Six aviation companies at Fort Campbell, KY, are currently programed for participation in the second phase of the test. Three test companies will use the phased inspection system, and three companies will use the standard intermediate/periodic inspection system. The field evaluation test plan will define the measures that will be used in deciding the comparative performance of the test and control units. One of the means of comparison will involve calculation of operational readiness, mission reliability, achieved usage, man-hours per flight-hour and spares usage.

A second field test is being conducted at Fort Hood, TX, using the CH-47C checklist which had also been developed as a Phase I objective. The test will use a single assault support helicopter company. Results will be compared against other similar units worldwide and with historical data of the test unit.

The concept under consideration in Project INSPECT is important since it will provide not only a means of updating aircraft inspection programs for the current fleet but even more important, a method for selecting the preventive maintenance appropriate for future systems. The availability of a valid, effective technique for evaluating competing inspection concepts promises to be an important technique for life cycle costing and other major decision-making requirements relative to the utility tactical transport aircraft system, the advanced attack helicopter and heavy lift helicopter systems now on the horizon. It is significant to note that, while the Deputy Chief of Staff for Logistics, DA, has maintained overall cognizance of the program, many major commands, agencies and organizations have actively participated in the project. Project INSPECT has benefited from the scrutiny and resulting commentary of aviation experts at all levels. As a result, the concept is receiving widespread acceptance and represents a coordinated effort to solve a problem of serious concern to aviation maintenance managers and commanders.

The plan has been put into action and the game is underway to determine if the "phased" aircraft maintenance scheduled inspection concept that won the paper game can win in a real operating environment.

Only time will tell.

THE TROUBLE WITH AVIATION SAFETY . . . IS PEOPLE

Major Roy P. Hooks
Directorate for Prevention, Operations and Education

USAAAVS

TO SIMPLIFY justification of that statement, let's categorize our folks into three groups: support personnel, aircraft crewmen and supervisors/commanders.

Support personnel receive outstanding training in our service schools. Let's assume that unit on-the-job training (OJT) programs adequately supplement and reinforce service school training. Generally, they are provided with adequate tools, facilities, policies and procedures with which to safely accomplish their jobs as well as contribute to the overall safety effort of the unit. Yet, support personnel continue to be listed as a cause factor in aviation accidents. Is this due to a lack of knowledge, supervision, motivation or a lack of all of these?

Certainly we have the finest training program possible at this time for both enlisted and officer aircraft crewmen. All of the aviator crewmembers volunteered for the aviation program, so it is not as though they are doing something they would prefer not to do.

THE TROUBLE WITH AVIATION SAFETY . . .

We have adequate policies and procedures to guide crewmembers to safe mission accomplishment. Continuous unit and formal training is provided throughout their career development. Yet, crew error continues to be a major cause factor in aviation accidents. Is this due to a lack of knowledge, supervision, motivation or a lack of all of these?

Now supervisors/commanders are our people who, as a rule, have the most experience and training. They have been provided all the tools necessary for an effective accident prevention program: numerous publications with policies, procedures, philosophy, guidelines and sample programs. They have sufficient subordinate leaders and staff personnel to develop, implement and monitor an effective safety program. They have the authority to reward those who comply with and exceed the standards and to discipline those who violate the rules. They have great latitude in planning their operations, organizing and staffing their units and directing and controlling their unit activities. Inspections and assistance visits help them detect weaknesses and potential problem areas as well as provide recommendations on how to correct deficiencies and improve programs. They are at liberty to request assistance from higher headquarters and other agencies. Yet, supervisory error continues to be listed as a cause factor in many aviation accidents. Is this due to a lack of knowledge, supervision, motivation or a lack of all of these?

Let's examine these three key points—knowledge, supervision and motivation.

Knowledge: Knowledge is acquaintance with facts, all that has been perceived or grasped by the mind. It is easy to see, then, how a lack of knowledge could contribute to human error as a cause factor in accidents. The aviator who doesn't know emergency procedures is likely to have an accident in the event of an emergency. The mechanic who doesn't know how to use a torque wrench is likely to apply incorrect torque to a bolt and set the stage for an accident.

Consideration of two aspects of knowledge may give us some insight into what we must do to ensure adequate levels of knowledge, and why. These are the process of developing knowledge (education) and the determination of the level of knowledge or proficiency (quality control).

Service schools are the foundation of our military education system. We contend, however, that a well-planned and supervised unit training program is equally essential to an adequate level of knowledge. There are at least two psychological factors that support this contention: learning and memory.

Learning is not at all a simple process that can be counted on to occur automatically or to have permanent effects. While conditioning probably underlies all learning, its effectiveness varies.

Transfer of training is the basis for all our educational and training efforts. In other words, something learned makes it easier to learn something else. Learning to walk enables us to learn to run. Learning to play the piano makes it easier to learn to play the organ. Paradoxically, there is a problem in transfer of training in aviation—habit interference. Transition from one aircraft to another requires transfer of training. Unfortunately, aircraft differ in many ways. These differences can impede transfer of training. While middle "C" is the same on a piano and organ, sometimes reversals of control-display relationships in different aircraft cause habit interference. Pilots have inadvertently cut the throttle or mixture control when they intended to reduce rpm. You can see how habit interference could affect an air traffic controller adjusting to a new radar set or a repairman working on a new piece of equipment.

Memory is the capacity to recall or recognize past learning. Unfortunately, human memory is fallible. The unreliability of memory has of course been recognized in aviation—witness the many checklists in use. There probably are several causes of forgetting. One of the most important in adult human activities is called retroactive inhibition. This is the adverse effect subsequent learning has on the retention of what has already been learned. Have you sat in a classroom for 6 or 7 hours a day and at the end of the day tried to recall what you learned the first hour? Had a little trouble, didn't you? That's retroactive inhibition. Its most adverse effect is found when subsequent learning involves exposure to material similar to that previously learned.

From this quick look at the impact of learning and memory on knowledge, it becomes obvious that a unit training program is necessary to ensure adequate knowledge. This program must be designed to reinforce and expand knowledge, promote and direct experience and provide for continuous evaluation of performance. In this manner we develop knowledge in our people and then maintain a high degree of quality control over that knowledge.

Supervision: Supervision is the art of ensuring compliance with actions and orders. Failure of leaders to supervise properly can only result in a breakdown of discipline, deterioration of job performance and accidents. All assigned tasks, or duties,

have inherent responsibilities. No one can rid himself of his responsibilities or obligations. So how do we pinpoint supervisory error? It's all a matter of degree. Probably the best method of determining degree of responsibility of a supervisor is by reference to job descriptions. Supervisory error usually encompasses more than one supervisor or one level of supervisors, since to supervise is to oversee or direct. Although the first-line supervisor may be most directly responsible for an error, someone else is responsible to see that he does his job properly. Thus the cliché that the overall responsibility rests with the commander.

The two most important aspects of supervision are (1) the ability of the supervisor to relate the size of the job to be done—the mission requirements—to the available resources, and (2) the willingness of the supervisor to remain sufficiently detached from the details of tasks to ensure efficient management of all functions through proper planning, organizing, coordinating, directing and controlling.

To supervise properly, the supervisor must become proficient enough in the area which he is checking to recognize deviations from standards. He must supervise in such a manner that the progress of work is checked without unduly harassing subordinates. But first and foremost, he must get out and make the effort!

Motivation: Given knowledge and proper supervision, one still must be motivated—must have the impulse or desire that moves one to action—to perform his tasks properly. Symptoms of poor motivation may be similar to those of complacency: failure to use checklists, to perform by-the-book maintenance or to follow regulations. The most apparent difference is attitude. The results are the same.

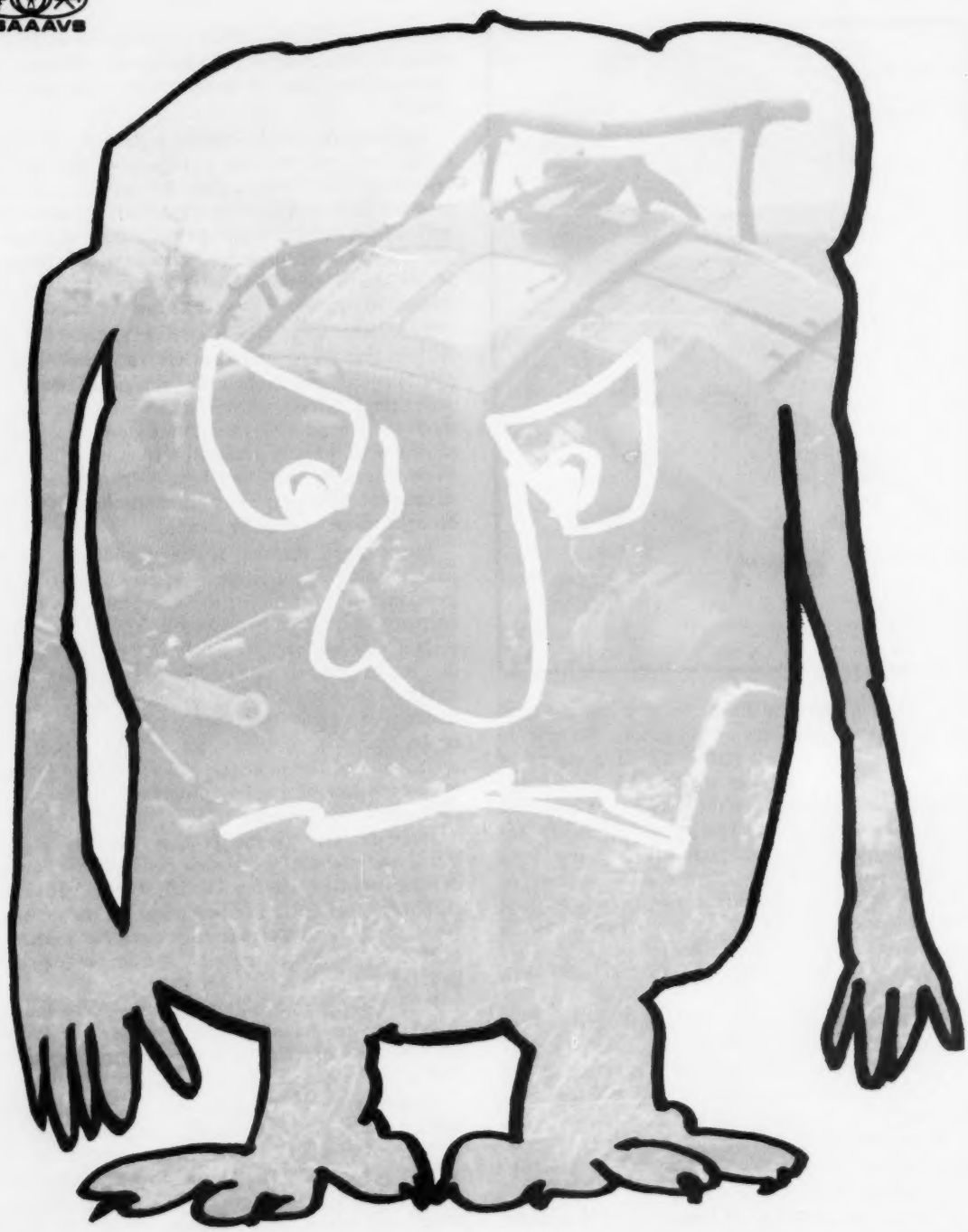
Let's take a brief look at how motives are generated. Our most basic motives are generated by physiological requirements—biological needs for such things as food, water and air. While these needs motivate us to activity, they do not guide us to acquire satisfying or socially accepted responses. This acquisition depends upon two behavioral processes, instrumental learning and internalization, that are brought about by outside sources.

Instrumental learning is the modification of behavior under circumstances where reward or the avoidance of punishment is contingent upon the occurrence of a specified response. This is the fundamental way we learn to satisfy our needs. In adults this is obscured by our continuous activities and is modified by human ability to transmit, receive and understand verbal and other symbols. We can read or be told how to behave or achieve a goal. The application of the principle of instrumental learning in the conduct of a safety program is obviously the commander's responsibility.

Internalization is the process whereby a child learns parental and social standards of behavior and develops its own internal model of these standards. Although most internalization occurs in the pre-adult years, the process still occurs in adults as leadership establishes standards and sets an example for adults to follow.

It is evident that although motives are internal drives, they can be influenced by outside sources. We can properly motivate our personnel through application of the principles of leadership.

Human error in accidents can be reduced by an understanding of man's strengths and limitations and an evaluation of his characteristics and behavior during the phases of selection, training and utilization. A well-planned, rigorous unit training program, active supervision and constant efforts at proper motivation will help to eliminate people trouble from aviation accident prevention.



LTC Bissell, a senior Army aviator, is commander of the HSC Flight Detachment, Ft. Sam Houston, TX. Prior to his present assignment, he was chief of the Officer Instructional Division, Education and Prevention Directorate, USAAAVS, Ft. Rucker, AL

Mr. Ugly, the personification of accident tragedy, is a grim reality to many, including investigators who probe through the wreckage of Army aircraft searching for clues as to the cause of the crash

HEY, MR. UGLY, WHO INVITED YOU?

Lieutenant Colonel Donald F. Bissell

HAVE YOU EVER witnessed a major car accident? If you have, you can never forget the sudden shock you felt the instant you knew the inevitable was going to happen; nor the sinking sensation you had as you realized no one could prevent it. It was too late. Then came the crash and the sound of metal crumpling, bending and breaking as it smashed against vegetation and ground. Simultaneously, a cloud arose to envelope the site like a dust devil spinning over a freshly plowed field. And when the dust had settled, you gazed in horror and disbelief at the twisted and scattered remains. In a fraction of a second, both property and life, with all its dreams, hopes and joys, had vanished. And you thought: If only the tire hadn't blown . . . if only the driver had checked it and mounted the spare . . . if only the car had been moving slower . . . if only the ditch had not been there. . . . And it had happened in a fraction of a second. But had it? Or was it just the end result of a sequence of events that allowed the disastrous Mr. Ugly to make his entrance?

Every accident is somewhat like a jigsaw puzzle made up of numerous pieces of different sizes and shapes. Some contribute to the accident directly; and some, indirectly. Others contribute to injuries of occupants. As one segment is joined to another, the puzzle takes shape. Finally, when the last piece falls in place, it's all over. Unwittingly, we—the human element—connect these segments. And while an accident may occur in a fraction of a second, it has actually been long in the making.

Let's take a look at a recent Army aircraft accident that has been purposely selected because it is not spectacular and does not introduce any novel or one-in-a-million kind of cause factors. It contains the same type of cause factors found in most accidents. Just the time, the place, the people and the vehicle are different.

The flight was a night medical evacuation mission to transfer a patient from one post hospital to another. The crew, on 24-hour standby, consisted of the pilot, copilot, medical aidman and crewchief. When in-

formed of the mission, they immediately began routine preparations. The UH-1H Huey had already been preflighted, and flight planning, weather briefing and flight filing were accomplished according to normal operating procedures. The patient and a physician who accompanied him as "on-board" attendant arrived for departure. Takeoff was normal, and VFR (visual flight rules) night flight of 1 hour plus 30 minutes estimated time en route was now in progress.

The door is opened for Mr. Ugly. Everything appeared to be strictly routine, but already three major segments of the real-life puzzle were locked in place, inviting the entrance of Mr. Ugly. Although the pilot was instrument qualified and familiar with the area, he had failed to maintain instrument proficiency because he intended to leave the service within 60 days. Similarly, the copilot who was newly assigned and recently rated had not maintained flight proficiency following graduation. This was his first mission. In addition, the pilot elected to fly visually after receiving the forecast of "questionable" flight weather (which was proven not to be just questionable, but plain bad) at his destination. A fourth puzzle segment was introduced when, for one reason or another, the pilot decided to fly from the left seat, positioning the inexperienced aviator in the right one. This may have been a carryover from tours in the Republic of Vietnam. Based on crew experience and proficiency, knowledge of the aircraft, area and terrain, and the flight conditions, the pilot should have been seated in the right seat where all the necessary instrumentation is most readily accessible.

Inside the cabin, the crewchief and the medic were helping the doctor administer intravenous fluids and oxygen to the unconscious patient strapped on a litter secured to the aircraft. The doctor was wearing civilian clothes and low quarter shoes. He had requested protective clothing but none was available, and he was not provided a protective helmet containing a microphone and headset. This meant that the medic had to remove his own helmet to hear the doctor's instructions. In addition, because he had not been briefed, the doctor did not know how to use the safety belt especially designed to protect him while giving him freedom to care for his patient. More puzzle segments had joined the others, opening the door wider for Mr. Ugly.

Then another segment fell in place. The "questionable" weather deteriorated. Visual reference was now impossible and instrument procedures had to be implemented. After arriving over their destination, the crewmen aborted their first landing attempt at the hospital helipad, and elected to change the touchdown site to a pad near a civil airport that offered a selection of instrument-type approaches.

The crew initiated an approach using a glide slope, localizer, marker beacon and ADF instrumentation. However, the instrument approach required the use of a navigational radio aid that was inoperative. The maintenance form in the aircraft's logbook showed that this unit had been repaired and was functioning properly. In reality, unauthorized maintenance had been attempted, the problem had not been corrected and improper entries had been made in the forms. Still more pieces of the puzzle were now firmly in place.

A missed approach was accomplished due to weather and a second approach to the airport was established. By this time, the Huey had been airborne 1 hour plus 45 minutes, adding new segments to the puzzle. With the low fuel supply, would there be

enough to handle all contingencies? Would there be an accessible alternate airfield in case the airport remained below minimums for landing? It is reasonable to speculate that there was considerable stress in the cockpit as the flight progressed.

Enter Mr. Ugly. The second approach was continued. Only one piece of the puzzle was still missing. It materialized after the crewchief and medic unbuckled their seat belts to help the pilots sight the ground. Suddenly, out of their side windows, they spotted trees and a clump of bushes through a fog bank, and they caught a glimpse of powerlines and a telephone pole in the beam of the landing light. Before either could shout a word of warning, the aircraft crashed 2 miles short of the runway, dramatically announcing the arrival of Mr. Ugly.

When the dust settled, the aircraft was on its side. The pilots and patient strapped in place weathered the episode in their respective positions. The medic, crewchief and doctor became flying missiles in the cabin. Had the doctor been overheard, he might have said, "Quid inferorum? Supra!" or translated, "What the hell! Over!" providing the general feeling of all concerned. Miraculously, there was no fire and, despite the severity of the crash, no deaths or serious injuries resulted although the aircraft was destroyed at a cost of approximately a quarter of a million dollars. Needless to say, the aircraft was quickly evacuated.

Locking the door on Mr. Ugly. What could have been done to keep the unwanted, yet clearly invited, Mr. Ugly out of the picture?

Numerous errors combined to cause this accident. They included errors in judgment, maintenance and supervision. The first known cause factor was the pilot's decision to fly visually after receiving the forecast of questionable visual flight weather at the destination. Why? This is a pure judgment decision and can be attributed to his lack of confidence in his proficiency in instrument flight procedures. The investigation disclosed that the crewmen did not check weather conditions at their destination prior to diverting to an alternate airfield, nor was it provided by approach control.

These factors were crew errors. However, the supervisor was directly responsible. The assumption by the supervisory chain of command that standardization and instrument training were being conducted and proficiency maintained was probably the most glaring error of all.

The physician's escape without serious injury was particularly noteworthy, but it does not lessen the serious lack of supervision in crew standardization and training, including related equipment. Protective clothing was not available for him. He was not briefed even in the simplest internal operations of the aircraft, including such a basic measure as securing the seat belt. Again, *why*? How much is a passenger or crew briefing worth in time, money, injuries to personnel or successful mission accomplishment? (Prior to this flight the doctor had made inquiries about future aviation medical officer training. Now, other specialty fields interest him!)

All of the factors involved in this mishap could have been prevented. Supervision and command emphasis on accident prevention must be positive and ongoing.

Brigadier General James H. Merryman, Director of Army Aviation, once remarked about another aircraft accident. His words are equally applicable and appropriate to this and all other Army aircraft accidents, and bear repeating. He said:

"My concern lies in thinking past the tangible evidence surrounding this accident. Clearly, responsibility will be addressed and neither you nor I will be outwardly involved. Yet when we read of an accident of this nature, purposeless, dangerous, and terribly wasteful, we need to look at ourselves and ask what we each have done within the aviation community to ensure things such as this do not occur.

"With this question in mind, I suggest that we look inward to evaluate the extent to which each of us in positions of responsibility can reach to influence the actions of our personnel. Once this personal evaluation is complete, let us make every effort to push ourselves the full distance and develop such a sense of responsibility toward each other and our program that in the event of future mishaps we can be confident that we have done all that was possible to prevent such an occurrence.

"What I am talking about is the need for LEADERSHIP . . . and PROFESSIONALISM!"

As a commander with attached aviation units, an aviation unit commander, an aviator, safety officer or safety specialist, are you aware of your role in accident prevention? Are you personally involved? Are you really doing everything you can to lock the door on Mr. Ugly?

PEARL'S

Personal Equipment & Rescue/Survival Lowdown

Fluorescent Orange Survival Panels

I noticed in a pair of my Nomex flight trousers on the white tag sewn into the seat of the trousers that under #2, "A survival panel of fluorescent orange material is located within the right thigh pocket to aid in air search and rescue of downed crewmembers."

My question is where are the survival panels? And, if they are taken out prior to the Nomex being shipped to the field, how do we go about ordering the survival panels?—ASO

Originally, the two-piece Nomex tropical uniform was developed for aviation personnel. The initial procurement contract required that an aviation personnel survival panel marker be placed in the right-hand thigh trouser pocket. However, due to the urgent requirement in Southeast Asia, the Nomex uniforms were fabricated and shipped without the panel marker. In June 1971, the Nomex uniform was adopted as a standard for armored vehicle crewmen. Because the tanker has no requirement for the panel marker, it was made a separate item of issue for aircrewmembers. To order the panel, submit a requisition through established supply channels. The federal stock number is 8345-140-4232; the description is panel marker, survival, aviation personnel; and the authority is SB 700-50.

Remove the panel marker from the Nomex trousers prior to any laundering or turn-in of the trousers for repair or replacement. *If not removed, the panel will become stained by the Nomex dye.* Obviously, the large reflective area provided by the panel marker increases the chances of downed crewmembers being located.

Sharing Ideas and Experiences

Many times, soldiers in the field come up with good ideas for the use or improvement of survival and rescue equipment. Knowledge gained from sharing these ideas or experiences can be very beneficial in case of an emergency. Following are two suggestions which I believe are worth passing on.

Combat Casualty Blanket

The incorporation of a combat casualty blanket (space blanket) in the SRU-21P survival vest would be very beneficial in the event of an aircraft accident. Even with the installation of the crashworthy fuel system, the possibility of fire still exists. During egress, most people will not stop to pick up any survival equipment on board the aircraft, so they must rely on their personal equipment. The combat casualty blanket, FSN 7210-935-6665, will fit neatly in the inside pocket of the vest. Folded as received, it measures 6″ x 5″ x 2″, opens to 56″ x 84″, and weighs a mere 12 ounces. The blanket will give adequate protection against the elements in both hot and cold climates. In case a crewmember is injured, the blanket will serve to keep him warm so as to help prevent or delay the effects of traumatic shock. This particular blanket is colored OD on one side and silver on the other. Also, two other blankets are available. One is OD and silver, weighs 3 ounces, measures 2″ x 2″ x 1″ when folded, and opens to 96″ x 56″. The FSN is 7210-935-6666. The other blanket has the same specifications; however, it is orange and silver and is assigned FSN 7210-935-6667.

Magnetic Compass

Some SRU-21P survival vests lack one of the most important pieces of equipment available in the event an aviator must walk away from a crash site—*a magnetic compass*. One could easily remove the magnetic standby compass from the aircraft; however, this presents a problem as there is not usually a crash ax on board the aircraft and very few pilots carry a phillipshead screwdriver. The lensatic compass, a component of the vest, generally is not available due to shortages in the supply system and also to the high pilferage rate. It is suggested that a much less expensive, but just as adequate compass be used. The wrist compass, FSN 6605-809-5252, will serve the purpose of the downed aviator as well as the more sophisticated and expensive lensatic compass. In addition to being less expensive, this compass requires less space and weighs less, both of which are important requirements of survival equipment.

Army materiel, to include personal equipment, is subject to equipment improvement recommendations (EIRs). So, if you have a suggestion for improving a piece of equipment, you should submit your idea on DA Form 2407 in accordance with TM 38-750, dated November 1973. The idea should also be considered for submission as a suggestion to the appropriate national maintenance point under the provision of AR 672-20, "Incentive Awards." You can also share your ideas with others by submitting them to PEARL, USAAAVS, Ft. Rucker, AL 36360.

USAASO Sez

The U. S. Army Aeronautical Services Office discusses

ZES OSAASU: If that looks backward to you read on. It was meant to because some people seem to work this way! Can you imagine buying a swimming pool for your backyard, contracting for its installation and calling your friends for the opening blast before determining that you had the space for the pool and met the local ordinances governing its use. A parallel may be drawn in the development of an airfield, airspace or aviation support facility. Imagine yourself buying Navaids, support lighting or whatever and constructing a site for such without first making a procedure study to determine that operational advantage really will be gained. You may find that your idea won't "fly" either due to obstructions, airspace problems, signal disruptions or even disrupting the restricted area firing ranges in the approach or missed approach area. If your airpatch is suitable for large aircraft, the boys in blue can't serve you unless applied criteria provides for category C and D operations. Other notable examples of putting the cart before the horse include hangars that are placed inside runway clear zones, control towers that don't provide full surveillance of the traffic area or airport movement surfaces and other obstructions that penetrate airport obstruction criteria or affect minimums. The real point is to get down to the basic building block theory. Some Army airfields just aren't worth trying to make much more of than their original function—a liaison strip. It might be more appropriate to change your strip to a functional heliport and plan for a new airfield. Some others fit logically into station development plans and must be considered as part and parcel in all short and long range master planning actions. Aviation officers should be members of the local planning staff and be available to prevent the planning of any obstruction, be it hospital or smokestack on top of the highest terrain in your only suitable approach area.

If aviation or airspace officers need help or technical advice, call us. USAASO can and will provide the technical expertise you need to get the best bang for our buck.

ATC Memorial Display: The Air Traffic Controllers Enlisted Wives Club at Ft. Rucker, AL, is preparing an exhibit and a memorial to Army air traffic control. It will be located at the U.S. Army Aviation Museum. The display will feature U.S. Army air traffic control facilities throughout the world, emphasizing the significant role of Army air traffic control.

Contributions of photographs, documents, facility historical packets and equipment when available are being accepted by the group. Persons/groups making donations will be given recognition with their exhibits. The display will reflect the pride and esprit de corps of air traffic controllers throughout the Army.

Please send your contributions to:

Curator
U. S. Army Aviation Museum
ATTN: SGM Rlyn Pitt
P. O. Box H
Fort Rucker, AL 36360

☆ U.S. Government Printing Office 1973—746-161/5

Major General William J. Maddox, Jr., Commanding General, U. S. Army Aviation Center, Ft. Rucker, AL, joins with Alabama Governor George C. Wallace on the lawn of the State Capitol in Montgomery for the formal dedication of MAST in Alabama

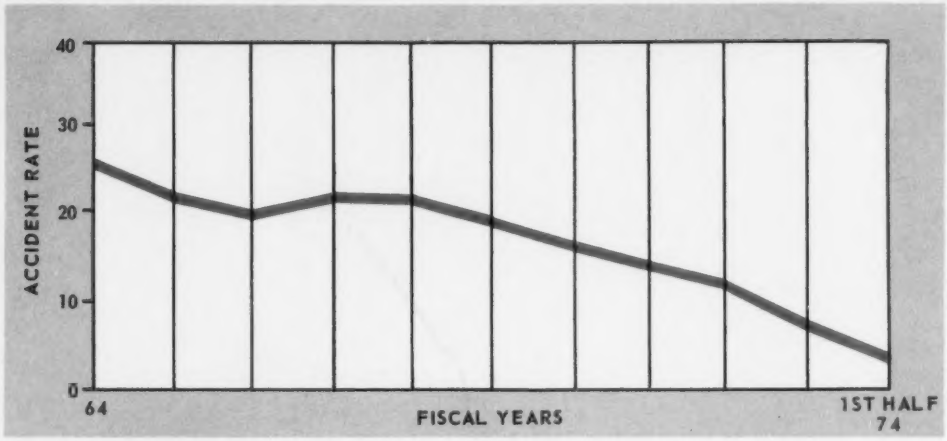
GOOD NEWS: Effective 1 April a general order was published by U.S. Army Health Services Command for the redesignation of the Ft. Rucker MEDDAC as THE U.S. ARMY AEROMEDICAL CENTER. This action was antedated on 1 January 1974 by the designation of the ARMY AEROMEDICAL ACTIVITY, an augmented version of the former Office/Department of Aeromedical Education and Training (OAET). The OAET was transferred that date from USAAVNS to U.S. Army MEDDAC, Ft. Rucker, AL, to facilitate the new aeromedical center organization. The Army Aeromedical Center organization brings together through command and formal coordination lines, all the essential elements of a comprehensive and meaningful Army Aviation Medicine Program. It consists of U.S. Lyster Army Hospital, the Army Aeromedical Activity, and the other activities normally associated with a MEDDAC (dental, veterinary, health and environment, etc.).

In addition, there is close and formal coordination with the U.S. Army Aeromedical Research Laboratory and the other investigative and research elements located at the U.S. Army Aviation Center including: the U.S. Army Aviation Center/School (USAAVNC/S); Agency for Aviation Safety (USAAAVS); Test Board (USAAVNTB); Human Research Unit (USAAHRU); and the Human Resources Research Office (HUMRRO).

The Army Aeromedical Center structure and relationship with these (above) organizations will provide a more fluid productive exchange of data among the various professional personnel and unit resources.

MAST: Effective 1 April, the Military Assistance to Safety and Traffic (MAST) was *formally* instituted at the Aviation Center. It is significant that the Army Aeromedical Center at Ft. Rucker is the only Health Services Command TDA unit in MAST. This air evacuation service for the local communities has been performed for several years by Ft. Rucker Flatiron crews who have countless successful missions to their credit.

Major General Spurgeon Neel, Commanding General, U. S. Army Health Services Command, dedicates the Army Aeromedical Center, Ft. Rucker, AL



"Take a Minute" to Consider Safety

I was pleased to note the downward trend in the worldwide Army aviation accident rate, especially the outstanding results for the first half of this fiscal year. This is the lowest combined rate for the Active Army, National Guard and Army Reserve since the Army began its accident prevention program in 1958.

The credit for this fine record goes to all the commanders, supervisors and individuals who have made safety an important part of every aspect of Army aviation. The savings in human lives and suffering, as well as in equipment, are significant, and contribute to making this a better and more combat-ready Army.

In light of the record of progress, and in recognition of our need to do even better in this area, I have designated June 1974 as "Take a Minute for Aviation Safety" month. The purpose of this action is to encourage each of you to "take a minute" to consider safety in all your aviation activities, and to develop supporting programs of your own to increase Army aviation safety.

My congratulations and a "well done" to all who have contributed to the safety improvements thus far. May your further efforts make the Army aviation safety program even more of a success.

General Creighton W. Abrams
Army Chief of Staff

USAAAVS